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THE
INFLUENCE OF POSTURE
ON WOMEN.

THE
INFLUENCE OF POSTURE
ON WOMEN

IN
GYNECIC AND OBSTETRIC PRACTICE.

BY

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1878.

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P R E F A C E.

IN the following pages an attempt has been made to collect the scattered materials of a subject which has hitherto received little attention, and to present them to the reader in as simple and concise a manner as possible. The task has been performed not with any intention of urging upon the profession a new etiological theory of disease or universal therapeutic method, but solely to point out the influence which posture has for good or evil upon the female pelvic organs, and its importance in gynecic and obstetric medicine. But whilst all intention of instituting a special mode of practice is most emphatically disclaimed, the author believes posture to be such a potent causative and curative agent in disease that no one can attain great success in any branch of the healing art who does not recognise position as capable of originating or intensifying morbid conditions, and as having the power to act as an important ally in combating the various disorders which daily confront him.

LONDON, 1878.

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THE
INFLUENCE OF POSTURE
ON
WOMEN.

CHAPTER I.

GENERAL CONSIDERATIONS ON POSTURE.

I. *Introductory.*

IT is impossible to believe that the disorders of women so frequently met with in the present day can be attributable to natural causes. Some may be accounted for by the accidents which occur at critical periods both in the married and single states ; others may have a constitutional or specific origin, whilst many doubtless result from want of fresh air and exercise, errors in dress, late hours, excessive dancing, or riding, and other imprudences ; but there still remains a large number the source of which it is thought must be referred purely to posture.

The effects of posture upon the health of women are not sufficiently appreciated. This is probably due to the difficulty of observing the influence which gravitation has upon the fluids and solids of our bodies ; for, ever acting and varying in its action with each change of position, it necessarily produces numerous and diverse effects, which, being developed slowly and insidiously, are very liable to be overlooked, or perhaps referred to any other cause but the right,

The subject of gravitatory influence in general medicine is one of great complexity and extent, upon which many volumes ought to be written. Only a brief imperfect essay is here presented to the reader. In it an attempt has been made to handle as simply as possible a class of facts hitherto much neglected, and to endeavour to demonstrate how potently the great law acts in producing, perpetuating, and curing the disorders to which women are peculiarly subject.

The female generative organs may, for all practical purposes, be considered as floating in a basin, the inside of which is padded with muscles, fat, &c. This bony basin or pelvis contains besides, in front, the bladder, and behind, the bowel, each of which is constantly varying in size as it receives or expels its contents. It is also tilted forwards, and the degree of inclination which it is made to assume will hereafter be shown to exercise an important influence upon the health of women. Attached to the rim of the pelvis are the abdominal walls, which pass upwards and form a pouch, in which the intestines, &c., are contained. Above this is the cavity of the chest, and between, ascending and descending, the diaphragm, which with each respiration disturbs the abdominal and pelvic contents.

There are two important anatomical facts relating to the female generative organs which must always be borne in mind—viz., their extreme mobility and vascularity. To these prominent characteristics frequent allusion will be made in the following pages, for it is evident that the more largely a part is supplied with blood-vessels, and the more easily it is displaced, so must it in like proportion be under the control of, and capable of being influenced by, gravitation.

There are also certain physiological considerations which we must remember if we would fully understand how morbid conditions may result from posture. The general effects of

position upon the circulation are very remarkable. The heart's action increases in rapidity in proportion to the amount of muscular exertion required to maintain the body in any given attitude, *e.g.*, as the result of observation it has been found that the pulse of a person standing being 85, it will fall to 76 when sitting, to 72 when reclining, and to 67 when recumbent. The bodies of the contracting muscles compress the veins and impel the blood contained in them towards the heart, and thus the circulation is accelerated. This action of the muscles may be well observed in the ordinary operation of bleeding from the arm. The stream of blood from the wound is manifestly increased when the muscles which move the fingers are made to contract.

There is another effect of posture upon the circulation with which every one is familiar. The swollen and prominent condition of the veins at the back of the hand when it is hanging down, and their rapid contraction and disappearance when it is held up, may be seen at any time, although in some it is much more marked than in others. The simple experiment, however, illustrates a great physiological fact, and shows that the further the blood is removed from the propelling action of the heart the more is it under the influence of gravitation. In the arteries the heart's power is paramount. In the veins muscular action and gravitation exercise their sway. The flushing of the face when the head is held down is another well known illustration of the effects of gravitation upon the contents of the blood-vessels. The redness vanishes at once when the erect posture is resumed. Surgeons have long recognised and made use of this gravitatory influence. It is remarkable how soon the heat, redness and swelling of an inflamed limb decrease when it is raised.

There are other examples of temporary physiological hyperemy of the blood-vessels, which affect us more nearly.

It has been stated that the reproductive organs of women are largely supplied with blood-vessels. The greater proportion of these vessels are veins accumulated together, so as to form large plexuses, which exhibit the peculiar phenomenon of erectility. The womb itself is subject to this condition. Upon the reception of the proper stimulus, it becomes engorged with blood, increases in size and weight, and raises itself into a more or less erect position. "Ubi stimulus ibi fluxus," is an axiom as old as Hippocrates, and to no part of the body is it more applicable than to the womb and the parts annexed to it. At every repetition of sexual excitement fulness and engorgement of the vessels take place. At every step in the process of reproduction, ovulation, nidation, and pregnancy, fluxion to a marked degree occurs, lasting for days or months. It is important to bear in mind these frequent determinations of blood to the sexual organs, for many of them require very little encouragement to make them pass the line which forms the boundary between physiological and pathological conditions. It is also necessary to keep before us the constant and antagonistic operation upon the circulation of muscular action and gravitation, and likewise the direct influence of these two forces upon the organs contained in the pelvis.

2. The Erect Posture.

The erect posture, although so noble and beautiful, may become to its owner a source of discomfort and misery. If women had bodies, like those of quadrupeds, always maintained in a horizontal position, they would doubtless escape a great many of the disorders to which they are liable. In nearly all animals the axis of the pelvis is parallel to that of the spine, but in the human female the relations of the two are very different.

A knowledge of the various pelvic postures is of great importance. The pelvis is capable of a considerable number of movements. Those which we must consider more particularly are its antero-posterior oscillations. In the erect posture these motions take place upon the balls and sockets of the hip joints, and in the sitting, upon the tuberosities of the ischia. In proportion to the amount of tilting backwards and forwards of the pelvis the plane of its inlet can be made to assume various angles of inclination. By forcibly flexing or extending the spine it may be altered from its natural angle of 54° , and made to form a line with the horizon, or perpendicular to it. Upon the proper maintenance of the pelvic inlet plane at its normal angle of inclination a woman's comfort and health greatly depend. When the pelvic inclination is natural, the line of the abdominal axis falls upon the anterior rim of the pelvis. When the body is bent forward and the inlet plane lies horizontally, this same line falls into the centre of the pelvic cavity. In the former case the contents of the abdomen rest, when the body is erect, upon the front part of the pelvis. In the latter, they gravitate directly into the pelvis, compressing its contents, impairing the functions of the organs contained in it, or perhaps producing still more serious mischief. Any deviation of the pelvic inclination from the normal towards the horizontal direction is injurious. No matter to how small a degree, when it takes place the proper poise of the organs is at once destroyed, and the weight of the abdominal viscera begins to act in a wrong direction. Naturally, the pelvic contents are out of the line of the abdominal axis, now however they are placed immediately beneath it, and consequently have to sustain a burden of intestines, &c.—a load liable to be increased and aggravated by the weight of clothes, or by the succussion produced in walking, running, dancing, &c.

The influence of gravitation upon the reproductive organs when the body is erect varies considerably. It may either act on the organs themselves, or upon the blood with which they are supplied, and the effects thus produced are again capable of being much modified by inaction or exertion. As in the erect posture it is necessary to avoid the evil effects of gravitation by maintaining the normal pelvic inclination, so is it equally important to counteract its bad influence upon the circulation by motion. The erect attitude is essentially one of action. Poised with admirable accuracy, the body is ready to move instantaneously in any direction at the command of the will. For hours the upright position may, when the body is in a healthy state, be maintained without fatigue if the muscular system be only kept employed; a few minutes, however, are sufficient to produce weariness if inaction is enforced. Watch a person constrained to stand in one spot for a lengthened period, and you will soon observe several ingenious efforts made to alleviate the consequent uneasiness. First, the weight of the body is borne equally upon both legs. Then it is alternately shifted from one to the other. Next, the body is rocked in different directions, so as to make the toes, heels, and sides of the feet each in turn bear the burden. Still, however, the weariness increases, and further relief is sought, either by leaning the body against some object within reach, or placing the elbows or hands upon any available projection.

Nature rebels against inaction when the body is erect. What are her reasons? Probably these:—In the absence of muscular exertion the circulation languishes, and the blood gravitates to the lower parts of the body, where it stagnates, and produces fulness of the vessels, or hypostatic hyperemy. This hyperemic condition, besides producing aching of the limbs, causes in women pain in the back, the

reproductive organs being over-distended with blood ; and if any of the physiological fluxions happen to be taking place at the same time, of course the discomfort is materially augmented. If a woman, therefore, would keep her health, it is necessary that she should satisfy nature's demands. She must hold herself upright so as to maintain the normal pelvic inclination, and she must, when erect, keep in motion. Let her walk, run, skip, leap, dance, or perform gymnastic exercises of any kind, but move she must. The feet and legs were made for locomotion : the vertical posture was never intended to be one of rest.

3. The Sitting Posture.

The Ischium or sitting-bone, from its formation, at once decides the question as to whether sitting is a natural posture. The thick rounded tuberosity found at its lower part can be intended for no other purpose than that of supporting the body when in this position. It being then evidently intended that we should sit, there must be doubtless a healthy and harmless, as there is most certainly an abnormal and injurious mode of doing so. Sitting postures may be divided into natural and unnatural. Let us consider the latter first.

Of all the machines which civilization has invented for the torture of mankind, and of womankind more especially, there are few which perform their work more pertinaciously, widely, or cruelly, than the chair. It is difficult to account for the almost universal adoption, at least in this country, of such an unscientific article of furniture. There is, without doubt, an instinct in the human race, which prompts them to raise their bodies to a higher level than that which nature has assigned. There is a feeling of satisfaction and superiority in being able to look down, even physically,

upon our fellow creatures. The throne is elevated to do honour to the sovereign. The table is raised on a dais to show respect to the principal guests. Sitting in the dust is a sign of humility. This instinct of self-elevation displays itself in the absurd fashion, which never quite dies out, of wearing high heels and tall hats—the former, besides absurd, being unmistakably injurious, distorting the foot, destroying the perfect poise of the body, and producing abnormal pelvic inclination.

Perhaps then it was due to this peculiar vanity of physical exaltation that men first began to sit on stilts. There were, however, probably other reasons. The chair was found easier to rise from than the mat on the floor, and in large assemblies, individuals by its use, could be packed together in a smaller space. Let its advantages, however, be what they may, nature inexorably rebels against it, and will not long permit its use unresented. It is interesting to see the number of devices adopted to overcome the discomfort which this sitting posture causes. The most common is crossing one leg over the other. This is generally done in two ways. In one the under part of the knee; in the other, the side of the foot or ankle, is raised and made to rest upon the knee of the other leg. The result of the first position upon the circulation is easily visible, for the compression of the popliteal artery causes the foot to jump at the reception of every fresh supply of blood from the heart. To obviate the discomfort of dangling legs, people press into their service everything within reach capable of bearing the weight of their feet. All attempts at elegance of posture are disregarded if relief can only be obtained. Footstools, leg-rests, chairs, tables, mantelpieces, any things, all things, are eagerly sought for and used. No matter at what cost of furniture or decency the painful cutting into the thighs of

the chair's edge, and the aching of the pendulous hyperemic limbs must be relieved. Nature will have her way, and if we would sit comfortably we must do so in the manner she commands. Ladies, thanks to their skirts, can curl up their legs in numerous ingenious methods and so overcome the dangling difficulty ; but, on the whole, they suffer more from the chair than men. Propriety demands from them a stricter adherence to conventional postural rules. They cannot assume attitudes which in the other sex would pass unnoticed. Their shorter limbs also cause them greater discomfort as the height of chairs is made to suit the convenience of the male rather than of the female sex. It is impossible to resist quoting the following passage from Cowper's "Sofa," which was found emphatically marked in a copy of that poet's works belonging to a lady :—

"But restless was the chair ; the back erect
Distressed the weary loins that felt no ease,
The slippery seat betrayed the sliding part
That pressed it, and the feet hung dangling down,
Anxious in vain to find the distant floor."

To this unnatural dependent position of the legs, which some women maintain for nearly two-thirds of their lives, is doubtless due the swollen feet, ulcerated legs, and varicose veins, so frequently met with. The evils thus produced are only capable of being prevented or remedied by the use of a seat sufficiently large to hold the legs and support them horizontally.

A second objection to the use of the chair is its back. In sitting, as in standing, it is necessary that the normal pelvic inclination should be preserved, and it is also requisite that the body should not be maintained motionless. The effect of leaning against the back of a chair is to produce flexion of the spine, and an undue approximation of the

plane of the pelvic inlet to the horizontal line, the result of which is, as has already been shown, to throw the weight of the abdominal viscera upon those of the pelvis. Another evil also results. The abdominal muscles which assist in keeping the body erect (their action in relation to the spine being as a string to a bow) are thrown out of use, and their retaining and supporting influence upon the abdominal contents is consequently lost. The whole mass is abandoned to gravitation, and it falls a dead weight, compressing the reproductive organs, and producing among other ills the inelegant deformity called "pendulous belly." Leaning forward over desk, embroidery, easel, piano, &c., by relaxing the abdominal muscles has very much the same effect. Our grandmothers who are laughed at for sitting so upright in their seats, and who scorned to lean back or indulge in soft easy chairs, were nearer right than we; and if we would be healthy and strong, we shall have to abandon some of our luxurious habits, and return somewhat to the good old simple, brave, and rigid ways.

Muscular action being necessary when the body is upright to prevent retardation of the circulation and gravitation of the blood, the sitting posture should not be made one of repose. It is a very bad habit to sleep in a chair. The languid circulation is at this time more under gravitatory influence, and pelvic hyperemia necessarily results. Nature also still further objects to the sitting posture as one of rest, and makes it manifest by the fatigue and uneasiness caused by the weight of the hanging arms. The wisdom of this is evident, for why should the respiratory muscles have to undergo the unnecessary exertion of lifting at every inspiration two long pendulous masses of flesh and bone? Surely breathing is the last of our vital actions which should be encumbered. To overcome the discomfort produced by the weight of the arms

our ingenuity is again taxed, and we see in consequence elbows on the table, arms crossed, hands clasped behind the neck, the elbow of one arm resting in the hand of the other, or both elbows supported on the arms with which upholsterers furnish our chairs. The weight of the head also becomes a source of uneasiness, and we therefore often find it upheld by the hand, the elbow being placed on the knee, or upon a table. Sitting upright when at rest is an unnatural posture, and the penalties attached to it cannot be escaped, for all the plans adopted for remedying its evils only increase them ten-fold.

We endeavour to escape the action demanded from us when sitting erect by using soft seats. This is another luxury which produces ill effects by enabling a person to sit too long in one position. Nature enforces change of posture when the thing sat upon is unyielding. Watch an audience seated upon wooden benches, and you will soon observe the truth of this remark. However interested they may be, it will be noticed that the weight of the body is constantly being shifted from one point of pressure to another, an action which is almost performed automatically, so little impression does it make upon the consciousness of the individual who performs it. The rocking-chair is comfortable, inasmuch as it allows us easily to change our position, and thus conform in some degree to the necessity for action, which has been shown to exist. A woman can sit upright on a horse in motion for a long time without experiencing the weary aching which might be produced by riding for the same length of time in a railway carriage with soft arms for her elbows, and a stuffed cushion for her back. The simple reason of this is that in the saddle, without support of any kind to lean against, she has her muscles kept constantly in action. The two principal requirements which nature demands of her when sitting are

satisfied. The circulation is accelerated by muscular contractions, and the normal pelvic inclination is, or ought to be, maintained.

What then is a natural and healthy sitting posture? You may see it any day in the nursery. A child sitting on the floor playing with its toys presents us with all the natural sitting attitudes in a very short time. The feet are in a line with the buttocks, and all the muscles in full play. A savage who is not acquainted with, or cannot indulge in the destructive luxuries of civilization, will show you the proper position in which to sit. You will see no dangling legs; on the contrary, you will perhaps find him holding the work on the ground before him steady with his feet, whilst he manipulates it with his hands.

Probably the most natural mode of sitting is that adopted by the Turks, and the most rational piece of furniture to sit upon is the divan. Lady Mary Wortley Montagu thus describes a Turkish lady's apartment:—"The rooms are all spread with Persian carpets, and raised at one end of them about two feet. This is the sofa, which is laid with a richer sort of carpet, and all round it is a sort of couch, raised half a foot, covered with rich silk, according to the fancy or magnificence of the owner. Round about this are placed against the walls two rows of cushions; the first very large, and the rest little ones. *These seats are so convenient and easy that I believe I shall never endure chairs again as long as I live.*" On a divan you may easily change your position, and assume any attitude; if you tire of sitting, you may recline; if you tire of reclining, you may lie down. There is nothing except its softness to induce you to maintain a posture longer than is good, and the legs are supported horizontally, as they should always be when at rest.

An effort has of late been made by upholsterers to over-

come the inconveniences of the chair by making it low and long in the seat ; but the attempt, although it decreases the dangling difficulty, increases some others of greater importance ; as, however, these are more especially connected with the reclining posture, this will be more conveniently considered in the next section.

4. *The Reclining Posture.*

Reclining is the favourite posture of English ladies, Many of them often spend the greater part of the day in this attitude ; in the house on lounging chairs and luxurious couches, and out of doors in padded carriages, they maintain this fascinating position. Little do they know the mischief it is producing, or how dearly they may have to pay for their pleasure. Reclining is nevertheless a natural posture, but, like sitting, there is a right and wrong way of doing it.

There are four modes of reclining,—1st, upon the right side and one elbow ; 2nd, on the left side and the other elbow ; 3rd, on the abdomen and both elbows ; 4th, on the back and both elbows.

Of these positions the first three are the best, because in them the abdominal contents are supported by the surface on which the person is reclining, and the pelvis is tilted over so as to cause the reproductive organs to gravitate forward and upward towards the inlet of the pelvic cavity : the shoulders are also pressed back, expanding the chest, and giving increased power to the respiratory muscles. The fourth position is the worst and most uncomfortable. In it the hands are rendered useless, the spine is bent forward or flexed, the chest is contracted, and respiration impeded. Besides this the abdominal walls are relaxed, the intestines badly supported, and worst of all, the pelvis is held in such a position as to facilitate the gravitation of blood to the

reproductive organs, and the precipitation of these organs and the abdominal contents towards the natural orifices at the outlet of the pelvis, the soft and yielding floor of which has in this position no compensating counter-pressure, as is the case in sitting. Yet this is the favourite reclining posture of women, the only difference between it and the one usually adopted being the substitution of sloping backs and cushions as props in the place of arms and elbows. In this way a pernicious posture, naturally uncomfortable, and which was never intended to be maintained for any length of time, is not only made endurable but very pleasant. The support of the elbows not being required, the arms are set at liberty, and the hands may be employed in holding a needle or a novel. Thus luxury, convenience, and upholstery conspire together, and succeed in perpetuating a reclining posture, which is undoubtedly a fruitful cause of many of the disorders from which women suffer.

The art of reclining is not known in this country. Some people think it a relaxing and enervating posture, and this is true if it be practised in the manner just described. The Romans were not an effeminate race—the *triclinium* did not destroy the activity, vigour, and courage of those who used it—the bravest heroes the world has ever known have reclined at their meals and feasts. They did not, however, recline all day, nor upon their backs. Athletic exercises in the open air occupied a large portion of their time, and thus they secured for themselves that health and enjoyment of rest which is sweetest when earned by vigorous action.

“The sedentary stretch their lazy length
Where custom bids, but no refreshment find.”

The injurious habit of constantly reclining has a most deteriorating effect upon the muscles. It is a law of nature

that muscular tissue, if not used, should waste in bulk and strength. This law applies equally to the heart. We have seen that it beats thirteen times a minute less when the body is in the reclining posture than when it is erect. This continued decrease in the number of its contractions must have the same detrimental effect upon it as upon other muscles. From the weak heart thus produced feebleness of circulation follows; as a further consequence the blood becomes more under the influence of gravitation, and hyperemy results.

As a general law relating to human postures, it may be stated that when the body is at rest the maintenance of a column of its blood perpendicularly is contrary to nature and harmful in proportion to the length of time it is so held. This applies more particularly to the blood in veins—the relative amount of force required to propel blood vertically away from the centre of gravity and horizontally must be obvious. When the body is erect it is so arranged that the perpendicular columns of blood in the veins shall in a great measure be raised by the contraction of the muscles in their immediate neighbourhood. If, however, the body be maintained at rest in an erect or semi-erect posture, the propelling action of the muscles upon the blood is lost, the veins dilate, the action of their valves becomes impaired, and numerous morbid conditions result.*

The reclining posture is a good one when temporary rest only is required. When it is adopted, the first three positions are the best, but neither of these should be solely used. Changing from one to the other is conducive to comfort and

* These remarks apply with equal force to the male sex. Many disorders of the prostate gland (the analogue of the uterus) are without doubt aggravated and sometimes caused by continuously sitting or reclining in a wrong posture.

health. The fourth, or dorsal reclamation, should be totally avoided by women, and more particularly when the reproductive organs are either from morbid or physiological causes in a state of hyperemy, or the general health in a feeble condition.

5. *The Recumbent Posture.*

The natural promptings which lead us to adopt various postures in a regular succession, from the erect to the sitting, from the sitting to the reclining, and from the reclining to the recumbent, are well worthy of notice. In the erect posture the legs are the first to feel uneasiness. To remedy this we sit. In the sitting posture the weight of the arms becomes a source of discomfort. To relieve this we recline. In the reclining posture, if no cushions or props are used, the elbows soon complain of their burden, and thus finally the recumbent position is assumed as the only one capable of affording complete rest.

But even in this posture, gravitation, although in a less marked degree, still holds its sway. Hypostatic hyperemy of the lungs in feeble bedridden patients is a well-known morbid condition. It is also thought that owing to the prevalent habit of sleeping on the right side, inflammations and effusions are more frequently met with on that side of the body.

The recumbent posture is of great service in restoring any loss of balance in the circulation which may have occurred during the day. Any accumulation of blood which may have gravitated into the lower parts of the body during the erect or semi-erect postures is gradually removed during the night when the body is horizontal; the dilated veins in the legs and pelvic cavity regain their tone and normal calibre, and the blood contained in them becomes natural in quantity and flows on uninterruptedly.

The maintenance of any particular pelvic inclination during the recumbent posture is of no very great importance. Our attention must now be directed to the position of the whole pelvis, and the relation it bears to the rest of the body. The worst of all the recumbent, as of the reclining, postures is upon the back. In this position the pelvis rests in such a way as to allow the viscera to gravitate into the depths of its cavity; and when there they are still further pressed down by the weight of urine which has accumulated during a long night. Nature protests in several ways against the long continuance of the dorsal recumbent posture. Besides the unbecoming appearance of a vacant open-mouthed countenance, a person sleeping on the back incurs the penalties of a dry tongue and mouth, and dreadful dreams, and others within ear-shot are harrowed by various hideous sounds, of which it is difficult to say whether the sudden shriek or the prolonged snore is the more distressing. Lying on the back the pelvis is in such a position as to continue during the night the effects which have been produced during the day. By tilting the pelvis over, however, as is done when lying upon the side or face, the reproductive organs have a tendency to fall forward out of the pelvic cavity exactly in an opposite direction to that in which they gravitate when the body is erect. In this way, by a wise provision, a balance is effected, and any mal-position of the organs, as well as any circulatory embarrassment which may have occurred during the day is remedied at night.

But the relation which the pelvis bears to the rest of the body is also of great importance. When the body is recumbent it should rest upon a level plane. Soft feather beds produce an unnatural posture. The hips of a woman are the heaviest, as they are also the widest part of her body. Being the heaviest, they sink lowest into the yielding feathers

and being the widest, they are the highest when they rest upon a level mattress. These are two facts worthy of consideration. If the hips are allowed to become the most dependent part of the body for one-third of a woman's life, is it to be wondered at that the reproductive organs situated in their immediate locality should suffer from morbid gravitatory influences? Upon a level surface, when the body is recumbent, the hips are so raised that the blood naturally falls from them; and this is another of nature's methods of restoring during the night the equilibrium which may have been lost in the day.

Feather beds also act injuriously inasmuch as they allow the body to remain for too long a time in one posture without causing discomfort. Upon a mattress the body cannot long remain at rest in the same position. A sense of uneasiness is gradually produced, and even during sleep the body is turned, and the plane of pressure shifted from one part to another. This again is another provision by which the evil effects of prolonged gravitatory influence are prevented.

Of all the recumbent postures then, that on the back is the worst; those on the face and sides the best. The broad bearing surfaces of the trochanters seem to point to lateral recumbency as that which should be most generally adopted. But no position should be maintained for too long a time. To prevent this, and the pelvis from falling below the level of the rest of the body, it is therefore necessary that couches and beds should not be made too soft and yielding.

6. The Prostrate and Kneeling Postures.

These are doubtless natural postures. The tuberosity on the upper and fore part of the tibia is evidently intended to be a bearing surface upon which the weight of the body may be sustained when prostrate or kneeling. These postures

are assumed when the hands are required to operate upon any object resting on a level with the feet. It is also an attitude expressive of submission or devotion. South of the Tweed kneeling is the posture assumed during prayer. It is necessary, therefore, to consider its medical aspects. The mode of kneeling erect and for a long time is very injurious, as in this position the body, when in a state of rest, remains vertical. Women suffer very much from the postures which they are obliged to maintain when in church, these positions being all perpendicular, and no muscular action possible. It is not infrequent to see worshippers resume their seats during the Psalms or a long anthem. The irksomeness and discomfort produced become unbearable, and in spite of the act attracting public attention, they must be relieved. Certainly in all forms of worship, the ritual which permits the most frequent change of position, is that which injures the health least, and allows the mind to devote itself to pious thoughts instead of to bodily afflictions.

When prostrate or in the knee-elbow position, as it is sometimes called, every influence of gravitation is to remove the blood and viscera from the pelvic cavity towards the head. It has, therefore, a powerful action in remedying the pelvic hyperemia and impaction which erect postures may have caused. Naturally the prostrate attitude is frequently adopted. Children remain playing with objects on the floor for a long time in this position. Civilization has, however, besides chairs, given us tables, upon which everything may be placed within easy reach of the hands, whether their owners be sitting or standing. All implements and utensils with which the land is tilled or floors cleaned, have been provided with long handles to obviate the necessity for prostration. It is true we sometimes see a prostrate maiden scrubbing door-steps, but it must be admitted that there are few

occupations now in which the attitude is obliged to be assumed.

It would, doubtless, be better for women were prostration more common; for, as has been already stated, a better circulatory balance would certainly be maintained by its occasional employment. For the relief of prolapsion and hyperemy it would have a far more powerful effect than any recumbent position. It is now, however, a posture which we seldom assume, and the results of its abolishment we have no means of calculating.

CHAPTER II.

DISPLACEMENTS OF THE PELVIC ORGANS PRODUCED
BY POSTURE.

FROM the foregoing general considerations it will be seen how wide an influence gravitation must have upon the position, nutrition, and functions of the female pelvic organs. To follow the subject still further satisfactorily, and to enable us thoroughly to appreciate the special effects of posture, it will be necessary to examine more particularly the causes which favour their development and perpetuate their existence, and to study each separately in orderly sequence.

Displacements of the pelvic viscera will therefore first claim consideration. Floating more or less freely in a bony basin, these organs are, even when in a perfectly normal condition, very readily affected by gravitation; but when they become increased in bulk or altered in consistence, this natural tendency is largely augmented.

The postural causes of displacements may be divided into *direct* and *indirect*. In the former the viscera are primarily influenced by gravitation. In the latter they are secondarily affected by other organs gravitating in their immediate neighbourhood. It must also be admitted that both these factors may act simultaneously in producing displacements.

1. *The Vulva.*

Unless excessively developed, hypertrophied, or burdened with some ponderous growth, the labia, *nymphæ*, and clitoris

are almost entirely unaffected by the direct influence of gravitation. When, however, from any cause they become greatly enlarged, their weight causes them to descend, and they become pendulous, or pedunculated, occasionally reaching some distance down the thighs.

Indirectly, displacement of the labia may be caused by the descent of a loop of intestine into them. When in the horizontal position the tumefaction thus produced may subside ; but if there be any difficulty in returning the hernial contents, the knee-elbow posture will be found advantageous. Prolapsion of the hymen, when imperforate, may be indirectly caused by the gravitation of menstrual fluid pent up in the vagina and uterus.

2. The Urethra.

The urethra is liable to direct displacement by the weight of tumours arising within it, or at its orifice ; a prolapsion of its mucous membrane is also liable to occur. The troubles produced by either of these conditions are much aggravated when the patient is erect, but for their cure surgical rather than postural treatment is required. The indirect displacements of the urethra are of great importance, for, owing to the distortion and compression of this little tube, many lives are lost. By retrorsion of the gravid uterus the urethra may be so dragged upwards out of its position as to prevent the flow of urine from the bladder, and in consequence an enormous accumulation sometimes takes place, which, if not detected and withdrawn, may, as it has done too often, end fatally. The same effect may also be produced during gestation and parturition by the gravid uterus descending and compressing the urethra. In both instances posture bears an important part in their treatment : that required for relieving the former condition will be considered further on,

the latter is remedied by the recumbent position with the hips raised.

(a.) *Retrorsion*.—The most remarkable displacement of the urethra is that produced by extreme retrorsion of the bladder. It may be called retrorsion of the urethra, and may exist in varying degrees, its vesical extremity describing an arc of nearly half a circle, of which the meatus urinarius may be considered the centre. In consequence of this displacement the bladder is seldom completely emptied, and the urine thus retained decomposes and causes much mischief. In some cases no urine can be passed until the vesical retrorsion has been replaced. The most suitable postures for performing this are the recumbent or the prostrate.

FIG. 1.

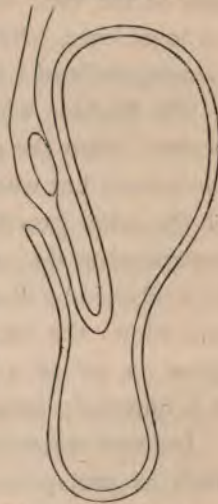


Diagram showing extreme Retrorsion of the Urethra and Bladder.

3. The Bladder.

The bladder alone is perhaps scarcely ever sufficiently heavy to cause its direct displacement: but when it becomes distended with urine, gravitation materially influences its position.

(a.) *Retrorsion*, by some called prolapsion of the bladder (see Fig. 1), is not uncommon, and the frequency with which it is met may be mainly attributed to the three following causes:—

- 1st. Excessive accumulation and too long retention of urine.
- 2nd. Prolonged maintenance of the erect or sitting postures.
- 3rd. Obliteration of the normal angle of pelvic inclination.

Owing to shyness or want of opportunity, a habit is often contracted early in life of retaining the urine for many hours, until at length the bladder becomes amenable to the demands of society, and habituated to over-distension. It is unfortunate that it should be so docile; for, although its owner may at the time be saved a great deal of discomfort and inconvenience, she is certainly running a great risk of creating evils of a more permanent and distressing character.

The bladder, when filled, is a heavy organ. In the erect posture, when the pelvis is normally inclined, it rests upon the pubes; but when the pelvis is tilted back, the whole weight of the urine gravitates directly into the pelvic cavity, and presses upon the anterior wall of the vagina. Should this be weakened by disease or child-bearing, it gradually descends and allows the bladder to fall back, describing in its progress an arc of a circle around the pubic bones, to which it is anteriorly attached.

Indirect causes may also accelerate its downward progress, such as prolapsion of the uterus, which is attached to its posterior wall, and superincumbent pressure, whether of visceral or vestmental origin. The preventive or curative remedies are:—

- 1st. The habit of more frequently emptying the bladder.
- 2nd. The maintenance of the normal angle of the pelvic inclination when erect or sitting.
- 3rd. The adoption of the lateral or prone reclining or recumbent posture when at rest.

(b.) *Prolapsion* of the everted bladder may take place through a fistulous opening in the vesico-vaginal septum, and appear of considerable size outside the vulva. In the horizontal position it can be easily replaced, but it immediately reappears when the erect posture is resumed. This condition can of course only be remedied by an operation.

4. *The Ureters.*

Puerperal convulsions are believed by some authorities to have their primary cause in functional derangement of the kidneys and impeded urinary excretion, resulting from pressure of the gravid womb upon the ureters. Dilatation of, and accumulation of urine in the ureters (hydronephrosis) is also caused by the displacement to which they are subjected when the vagina becomes inverted.

5. *The Vagina.*

The vagina being an exceedingly flexible tube, capable of great distension, and moveable at its upper extremity in every direction, is consequently liable to numerous displacements.

(a.) *Antrorsion.*—This deviation of the upper portion of the vagina anteriorly may be caused by large masses of feces in the rectum, by liquid accumulations or solid tumours in Douglas's pouch, by vaginal enterocele, and by retrorsion of the uterus, whether it be in an unimpregnated or gravid condition.

(b.) *Retrorsion.*—The fundus of the vagina may be forced backwards by the weight of the distended bladder, by antrorsion of the uterus, &c.

(c.) *Sinistrorsion and dextrorsion* of the vaginal roof may be produced by displacements of the fundus uteri in the opposite direction, and by lateral pelvic effusions and tumours.

Although considerable discomfort is sometimes caused by these displacements, they are not generally of much clinical importance, the vagina being so loosely attached to the surrounding organs as to render it capable of being moved in almost any direction without causing appreciable symptoms. The extreme antrorsion of the vagina, produced by

retrorsion of the gravid uterus, would not demand so much serious attention were it not that the urethra must necessarily be carried out of its normal position with it. All these deviations of the vagina, however, have probably a practical bearing in connexion with the process of insemination, but this will be considered in a future chapter.

(d.) *Prolapsion*.—This displacement is chiefly due to a relaxed condition of the mucous membrane of the vagina, which, when the patient is in the erect posture, appears external to the vulva, in the form of a thick round ring. It may or may not co-exist with uterine prolapsion.

(e.) *Inversion*.—This displacement of the vagina, called by some writers prolapsion, may be either *partial* or *complete*. It is not uncommonly met with in both forms.

Partial inversion may occur under the direct influence of gravitation when the walls of the vagina are voluminous or relaxed. The posterior wall is the part most likely to suffer from this displacement. It occurs with the greatest frequency in women who have borne children, and more especially in those cases where the perineum has been ruptured and allowed to remain disunited. It may also be produced by the direct traction of tumours hanging from, or growing within the vaginal walls. These growths sometimes attain a great size, and cause considerable displacement and discomfort. Relief may be obtained by remaining in the horizontal position until suitable measures for their removal or support can be devised.

Partial inversion from indirect causes may arise in several ways. During labour the lax vaginal mucous membrane may be pressed down before the child's head and made to protrude externally. Anything which presses upon the vault or sides of the vagina may have the effect of producing partial inversion. Retrorsion of the bladder (cystocele) is a not unfre-

quent cause. It may so force down the anterior vaginal wall as to invert a considerable portion of it, and make it appear external to the vulva, in the form of a large rounded tumour. A similar inversion of the posterior wall of the vagina may result from an accumulation of feces in the rectum (rectocele). But it is in the vaginal vault that partial inversions most frequently occur. They may be produced by collections of pus, or by serous or hemorrhagic effusions in the subperitoneal connective tissue, or in the peritoneal cavity ; by the fundus of a flexed uterus ; by an over-distended bladder ; by loops of intestine (vaginal enterocele) ; by an enlarged prolapsed ovary ; by extra-uterine fetation ; and lastly, and more frequently than all these, by partial prolapsion of the uterus.

Most of these displacements are only developed to their full extent by the erect posture. If, therefore, the practitioner would fully appreciate their true importance he must examine his patient when in this attitude. Many of them may entirely disappear when the recumbent position is ordered, and in consequence an error in diagnosis may easily be made.

Complete inversion of the vagina is always the result of indirect gravitatory influences, the chief of which are vesical retrorsion and uterine prolapsion. It may occur suddenly or gradually, but cannot exist without considerable displacement of the other pelvic organs.

Inversion of the vagina, whether partial or complete, is often accompanied with distressing symptoms, the chief of which are feelings of weight, fulness, and bearing-down locally, and discomfort in walking, standing, or sitting. These vary, however, with the different causes of displacement.

Postural treatment is of much service in cases of vaginal

inversion. Most of the uneasy symptoms caused by it disappear when the patient reclines or lies down. If in any of its forms replacement should prove difficult, the knee-elbow posture will be found a considerable help. Of course when the inversion is caused by collections either of urine or feces, these must be removed before any attempt at reposition is made.

In returning a completely inverted vagina, its anterior wall, which is the first to protrude, should be the one against which pressure is made. In either lateral recumbent posture the whole viscus may be generally readily replaced, but should any difficulty be experienced the prostrate position may be tried with advantage.

6. *The Uterus.*

For the purposes of this essay it will not be necessary to enter into a minute description of the many ways in which the uterus may be dislocated and contorted. It will be sufficient to consider them generally, and to express by one word a number of conditions which a systematic writer upon uterine displacements might by a subtle process of analysis define by a large number of suitable differential terms—*e.g.*, the various forms of retroflexion and retroversion will be considered under one head, expressed by the word retrorsion.*

The great mobility of the uterus renders it extremely liable to displacements. It is an organ so lightly tethered in the pelvic cavity that during the whole life of a woman it is never completely at rest. The emptying and filling of the rectum, bladder, and lungs keeps it tossing up and down

* Dextrorsum, sinistrorsum et ad latera ut ad ilia et ad inguina, antrorsum et retrorsum, ut ad vesicam et intestinum.—Hucher, *De perversione uteri*. 1610.

and to and fro incessantly, and when it is by any means thrown out of its proper place its powers of self-redression are very small. It is not improbable that this constant exercise of the uterus is necessary for its healthy existence. Its veins are without valves, and the circulation within them is doubtless accelerated not only by the contraction of the uterus itself, but by its perpetual and multivagous movements. Slight and temporary displacements of the womb must not therefore be looked upon as abnormal and undesirable. It is only when they become exaggerated or permanent that they are to be regarded as productive of mischief; for then and then only do they begin to have an obstructive influence upon the circulation, and a painfully evident effect upon the health.

(a.) *Prolapsion*.—Although the uterus is held somewhat in its position by the round and broad ligaments, for practical purposes it must be looked upon as principally supported by the vagina, the bladder, and the utero-sacral ligaments. In spite of all these attachments, however, falling of the womb ever has been and still is a very common complaint.

Uterine prolapsion may be divided into *complete* and *incomplete*. In its incomplete form it follows in its descent the curve of the pelvic canal, in its first degree being anteverted, and in the last retroverted. Prolapsion of the uterus is called complete when the whole of it has fallen outside the vulva. In this position it is usually slightly anteverted, as has been proved by repeated gynecometrical observations.*

* This statement is at variance with the opinions of some authors; it is satisfactory therefore to be able to substantiate it by quoting the following passage from Dr. Julius H. Klob, who, writing about "complete prolapsus uteri," says: "At the lowest extremity of the tumour, the external orifice of the uterus is situated. It is almost always directed somewhat posteriorly—a fact which from observations I am forced to admit with Scanzoni, notwithstanding the contrary might be inferred theoretically."

Whenever the erect posture is assumed, at every inspiration and every step slight uterine prolapsion occurs, but to such a small extent as to be unappreciable, except the organ itself or some of its annexes happen to be affected by a painful disorder. In its healthy unimpregnated condition the weight of the uterus is so insignificant that it seldom descends to any considerable degree by the direct influence of gravitation. In the case of severe falls, however, it may in this manner become seriously prolapsed.

When prolapsion of the uterus is caused directly, the displacement is usually due to increase of its size, produced either by general hypertrophy, pregnancy, sub-involution, or tumours. Its weight, under these circumstances, may be so great as not only to cause it to fall, but to render it capable of dragging down other pelvic organs with it. The most frequent cause of this displacement is the assumption of the erect posture too early after child-bearing. For a month or six weeks after this function the uterus, although daily decreasing in bulk, is far heavier than previous to impregnation, and the vagina and its other pelvic supports being in a relaxed condition, direct gravitatory displacement is extremely liable to occur. It may also result when the body is maintained in the dorsal semi-recumbent position, for in this attitude the brim of the pelvis is held horizontally, and the uterus consequently gravitates directly into the pelvic cavity. This same direct displacement may also happen when the normal pelvic inclination is not maintained whilst the body is erect.

In sitting or standing, if the body be bent or allowed to fall forward, the inclination of the pelvis becomes altered from the normal angle of 54° (Fig. 2) to one of 27° (Fig. 3) or less.

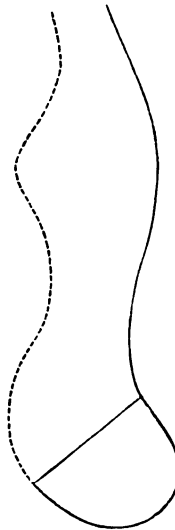
The effect of this change upon the abdominal walls is in-

dicated in diagram No. 3. The abdominal viscera, instead of being supported, are now abandoned to their own weight, and fall directly upon the uterus. If at the same time the body be subjected to succussion, whether from riding, dancing, &c., the evil is much increased ; and if also the uterus be enlarged, the surface upon which the viscera rests is, of course, greater, and the downward forcing power is proportionately augmented.

FIG. 2.

Diagram showing the Normal
Pelvic Inclination.

FIG. 3.

Diagram showing Debased
Pelvic Inclination.

Prolapsion of the uterus is far more frequently produced by indirect than by direct causes. These may act upon it either below, above, or laterally. By organs in its immediate neighbourhood, or at a distance, it may be dragged or pressed towards and through the vaginal orifice. Polypi attached to its cervix, and prolapsion or inversion of the vagina, may drag upon it from below. Pelvic and abdominal tumours and

the intestines may press it down from above; any pelvic tumours connected with its sides will have the same effect, but by far the most common cause is retrorsion of the bladder, which, owing to its intimate attachment to the anterior surface of the uterus, cannot fall backwards alone. The weight and hydraulic force of urine in a distended bladder is not sufficiently considered as a factor in uterine prolapsion; it is, however, one of great importance, which should be constantly kept in view when seeking the causes of this displacement.

All prolapsions must be considered more or less as the penalty of an upright posture. Most of them, in fact, are due to the prolonged maintenance of the body erect when at rest, and to the horizontal position of the pelvic inlet when in this attitude. The postural treatment of these displacements must therefore chiefly consist in rectifying pelvic and corporeal malpositions, and in removing the indirect evil gravitatory influence of clothes.

The bad effects of pelvic malposition, although not open to the eye, and consequently not much noticed, are nevertheless of serious importance. How many women, when standing, walking, or sitting, either from carelessness, weariness, or affectation, allow the body to drop forward! In every erect position of the body its natural poise should be maintained. A straight line, falling from the nose to the toe, should, when the body is erect, touch the front part of the pelvis; when the body is bent forward the same line will be found some inches in advance of its proper position. This latter posture is the one in which poor women stand over the washing-tub or ironing-board, and of all persons these are the most subject to uterine prolapsion.

Pelvic posture depends very much upon the condition of the lumbar portion of the spine. When it is sufficiently

arched the line of beauty and the right pelvic inclination is preserved, but if it be straightened the inclination is reduced, and much of the figure's elegance is lost. When this lumbar curve does not exist it may be gained by the use of suitable calisthenic exercises, or by the judicious employment of mechanical agents. No time should be lost in endeavouring to restore it, for the longer the curve remains obliterated the more difficult will it be to reproduce the original degree of flexion. All those muscles which extend the spine and brace back the shoulders, should be regularly and persistently exercised, and if it be considered necessary to aid these by mechanical means, two plans of treatment may be adopted—the direct and the indirect. The direct consists of an apparatus which acts by pressing the shoulders and pelvis backwards, whilst a counter-pressure pad forces forward the lumbar portion of the spine. The indirect consists of a broad belt round the waist, with a weight attached to it in front, which has the same effect upon the individual as a corpulent abdomen or pregnant uterus would have, causing the shoulders to be thrown back in order to preserve the poise of the body. All mechanical arrangements, however, should only be used as a last resource. Well-directed muscular exercises will, if persevered in, usually accomplish all that is desired. In the personal recollections of Mrs. Somerville an account of the mechanical postural treatment of 1790 is to be found. "At ten years old," she says, "I was sent to a school at Musselburgh, kept by Miss Primrose. A few days after my arrival, although perfectly straight and well made, I was enclosed in stiff stays with a steel busk in front, while above my frock, bands drew my shoulders back till the shoulder-blades met. Then a steel rod with a semicircle which went under the chin was clasped to the steel busk in my stays. In this constrained state

I and most of the younger girls had to prepare our lessons."

The postural treatment of uterine prolapsion, as far as the whole body is concerned, depends upon the more or less constant adoption of recumbency. The recumbent posture, with the hips raised, is the best remedial position. In fact many cases of recent standing are often cured by this method alone. It must not, however, be expected to prove efficacious when the displacement is extreme or has existed a long time. Yet, even with these conditions, the horizontal position will be found a valuable auxiliary to any other methods of treatment which it may be found necessary to employ. It must, indeed, be admitted that a considerable portion of the success of those operations which are performed for the cure of prolapsion, is due to the long continued recumbent posture in bed, to which patients must submit during the healing process. Whilst this is progressing, the uterus becomes less hyperemic and bulky, and its supports regain their normal retaining strength. All who suffer, even from a slight degree of prolapsion, should carefully avoid sitting upright or standing for any length of time. They may walk, aided at the time by some suitable artificial support, such as pessaries and abdominal bandages, but when not taking exercise they must recline or lie down as much as possible. Of course these observations apply with increased force when the uterus is pressed down by tumours or fluids, encysted or free, gravitating immediately upon it.

When the body is erect the influence of dress is of sufficient importance to demand careful attention. Attitude depends upon clothing more than is generally supposed. The stooping position, which has been referred to as so injurious, is often produced by the peculiar feminine vestmental arrangements at present in fashion. The greater part of the burden

of a woman's clothing hangs from the posterior part of her body. All the folds of her skirts are carefully disposed behind, and the swaying influence of their weight here is much increased by the leverage power granted them by the numerous ingenious devices adopted for insuring their projection backwards from the body. As the balance can only be maintained by inclining the body in the opposite direction to that in which it is drawn, it must necessarily be bent forward to counterpoise this retroverting influence.

High heels also throw the body out of its proper balance, producing stooping, relaxation of the abdominal walls, and debased pelvic inclination.

But dress, in its strictest sense, has still another potent way of causing mischief—namely, by its weight when suspended from the waist; a weight not inconsiderable in itself, but rendered of much consequence by its persistent action. The bands, from which the garments that women wear hang, are chiefly supported by the abdominal walls, and the viscera beneath them. Ultimately therefore they must compress the pelvic organs, and cause their downward displacement. As a rule, all vestments should be carried by the shoulders. Long robes, falling from them, and girded at the waist, are the least harmful, if not the most beautiful garments a woman can wear. If, however, it is absolutely necessary that her dress should be divided into two portions at the waist, let her, by all means, adopt some method of suspending the lower half from the shoulders. Braces of a very simple and inexpensive kind, having safety hooks, which may be passed through the bands of skirts, are now easily obtainable, and their general adoption is much to be desired. The position of the waistband must also be considered, for whether it should be high or low is a point of much importance. The fashion of short-waisted dresses is by far the more healthy.

Long waists involve abdominal compression by stays, and that closer contact of bands with the walls of the abdomen which enables the downward dragging weight of skirts to exercise its influence most injuriously. The natural position of a woman's waist is neither high nor low, but in that part of her body which happens to be the smallest in circumference. If fashion would only allow this to be the proper place for the waistband, we should not, as now, have the constriction of stays and the gravitation of garments conspiring in the production of prolapsion and its concomitant disorders.

(b.) *Eversion.*—If, when prolapsion of the uterus is complete, the patient persists in passing a large portion of her time in the erect posture, the external os becomes dilated by the vaginal traction upon its circumference, and the process of eversion commences. In cases of old standing this may go on to such an extent as to bring the internal os into view, and it is conceivable that this displacement might become so aggravated as to end in the complete inversion of the organ. The postural treatment of this displacement must be the same as that for prolapsion.

(c.) *Retro-prolapsion.*—A retroverted uterus may descend through and out of the pelvic cavity in consequence of the combined postural causes which produce prolapsion and retrorsion. This position of the uterus outside the vulva is not so common as some suppose. Well-marked instances of it are, however, recorded, and may occasionally be met with.

(d.) *Elongation.*—If, during the occurrence of prolapsion, the sacro-uterine ligaments continue tense and unyielding, the weight of the bladder, when the body is erect, drags down the plastic cervix uteri, and causes it to become attenuated and elongated. The os uteri may therefore in this way be displaced beyond the vulva, and the fundus remain in situ, or only slightly prolapsed.

(e.) *Torsion*.—This displacement is usually attributed to pelvic deformity, but it is probable that the partial rotation of the uterus upon its own axis is more frequently caused by the gravitation of tumours in or attached to it, the body being at the same time in a horizontal posture. For example, a subperitoneal fibroid, situated in the posterior wall of the fundus would, supposing the patient to lie upon her side eight hours a day, have the effect of twisting the uterus from left to right, thus causing the long transverse diameter of the upper part of the uterus to lie more or less across the pelvis in an antero-posterior direction, the neck remaining in its normal site in consequence of its numerous attachments.

(f.) *Ascension*.—When in the lateral recumbent posture the pelvis is tilted over, the uterus, relieved from the pressure of the abdominal viscera, gravitates directly away from the vulva, and in this way, as has been already shown, any uterine depression which may have taken place during the day is remedied at night. When sitting, the pressure of the surface sat upon forces up the yielding floor of the pelvic cavity, and thus indirectly causes the organs contained in it to rise. This is an admirable provision for the purpose of counteracting the prolapsing influence of sitting upright. Its principle may be advantageously adopted in treating prolapsions, pressure being made from below by pads which are supported from the waist. Some women find much relief from this upward pressure, and endeavour to increase it when sitting by holding the sides of the chair, and drawing themselves tightly down upon the seat.

In early pregnancy and uterine enlargements it is sometimes highly desirable that the uterus, in consequence of the distressing symptoms which it is producing, should be made to ascend into the abdominal cavity. For these cases the

knee-elbow position will be found to favour the manipulations of the operator.

(g.) *Antrorsion*.—The uterus being in its natural position inclined forwards, it is easy to understand how, when the body is erect, or in a stooping posture, this organ may, by direct gravitation, be caused to fall over too far anteriorly. This tendency is much increased when the uterus becomes augmented in bulk by pregnancy and morbid growths, and still more so if these growths exist in the fore part of the uterine body, and the pelvis chances to be unusually capacious. This and similar displacements occur much more readily when the uterus is in a soft and flabby condition. And when in this state it may be found one day dislocated in one way, and another day in exactly the opposite direction. The character of the deviation is also influenced by the consistency of the uterus. When it preserves its natural firmness the displacement is a version; when it is in a softened condition it is liable to become a flexion.

Indirectly the normally antroverted uterus is liable to further antrorsion as a consequence of any superincumbent pressure—*e.g.*, abdominal viscera falling upon it, owing to debased pelvic inclination, or ovarian and abdominal tumours, or an overloaded rectum acting in the same manner. Straining, muscular efforts, and falls when in an erect or sitting posture may also indirectly produce antrorsion. This displacement of the completely prolapsed uterus is caused by the upholding power of the utero-sacral ligaments behind, and the dragging-down influence of the retrorsed bladder. The postural remedy for this displacement is the dorsal decubitus. Simply reclining on the back is of little use. The shoulders must be maintained when the body is at rest on a level with the hips. Two things may be recommended which on nearly every other occasion should be avoided—namely, lying upon

the back, and allowing the urine to accumulate in the bladder, for its distension and weight both have a redressing effect.

(h.) *Retrorsion*.—This displacement of the uterus may occur directly either from its own weight when in the impregnated or unimpregnated condition, or from the gravitation of tumours connected with it. If from increased weight or relaxed supports a tendency to uterine deviation should exist, retrorsion will be much favoured by the dorsal recumbent and reclining postures. The practice which some ignorant nurses and midwives enforce of keeping women after their confinements continually lying upon their backs is a very constant cause of this displacement. The uterus at such time being soft and heavy is consequently more readily affected by gravitatory influences, and should retrorsion take place during the process of involution the organ is liable to become permanently distorted. This subject, however, will be more fully referred to in another chapter.

In all cases of prolapsion in which the uterus remains in the pelvis retrorsion takes place and increases in degree in exact proportion to the amount of downward displacement. Should prolapsion be due, as it generally is, to indirect causes, and more particularly to superincumbent pressure, and the uterus be retarded in its descent by its numerous suspensory attachments, retrorsion becomes much aggravated, and the uterus, instead of having its long diameter parallel to the pelvic axis, becomes so much dislocated as to lie directly across it; and if the uterus be at the same time in a flaccid condition the deviation becomes complicated by the organ bending upon itself and producing various degrees of flexion. Of all the indirect causes of retrorsion, however, distension of the bladder must be looked upon as the most frequent, for the bulk of accumulated urine forces the body

of the uterus backwards, and causes prolapsion of the whole organ into or through the pelvis. But in whatever way retrorsion may originate, whenever it has been once established, all the superincumbent causes mentioned under Antorsion of the Uterus come into effective play, and tend to increase and perpetuate the displacement.

The postural treatment of retrorsion consists in lying or reclining upon the sides, or, still better, upon the face. Prostration also is an admirable attitude. A remarkable anecdote in support of this, is told of a lady suffering from retrorsion, who made her complaint the subject of prayer, and was surprised to find it answered only whilst she was upon her knees. All pain ceased during the devotional act—that is, when she unconsciously adopted the proper postural treatment. It is also of great importance that the condition of the bladder should be attended to. The urine should not be allowed to collect in it in large quantities. All superincumbent abdominal pressure must be carefully avoided. The weight of the clothes should be borne on the shoulders ; and if the abdominal viscera be loaded with fat, or from any cause abnormally heavy, proper fitting bandages and special pessaries will be required.

(i.) *Dextrorsion and Sinistrorsion.*—When lateral obliquity of the uterus, whether congenital or acquired, already exists, there must be a tendency for the organ to fall still further towards the side upon which it inclines. This tendency is of course much increased when the uterus becomes in any way enlarged. Fibroid tumours and other growths in or attached to the side of the uterus will, when the patient is erect, produce by gravitation lateral displacement. The same may also result from relaxation of the ligaments of one side, from the habit of sleeping constantly on the same side, or from violent falls upon the side. All lateral displacements are

exaggerated, when the body is erect, by superincumbent pressure ; they are also caused or increased by lateral tilting of the pelvis, produced by a short leg, curved spine, or any other cause.

These displacements are not, as a rule, accompanied by such unpleasant symptoms as the antero-posterior dislocations—in fact they may, and often do, exist without attracting the attention of the patient, or demanding medical interference. Dextrorsion is the more common, and this is probably due to the fact already mentioned, that most women sleep upon their right sides, and spend a third of their lives in this posture. If painful symptoms be produced by dextrorsion or sinistrorsion, they may be greatly relieved by postural treatment, the character of which must be obvious, the patient being requested to recline or lie down upon the opposite side to that towards which the uterus falls. The relief consequent upon this simple expedient is sometimes remarkable.

(k.) *Inversion*.—When the uterus is in a normal condition it is very doubtful whether this displacement can be produced by the direct effects of gravitation. It has been supposed that it may take place when the uterus is soft and distended, but it must be a very exceptional circumstance. The weight of a tumour or polypus hanging from the fundus may, by constantly dragging it down, at length produce complete inversion, and this appears to be the only way in which this displacement of the unimpregnated organ can occur. On the same principle inversion of the uterus may take place immediately after delivery, the woman being in an erect or sitting posture, and the weight of the child dragging, by the cord and placenta, the fundus uteri forcibly down through the open cervix into the vagina. It may also occur after labour in consequence of pressure from above, caused by the

weight of the abdominal viscera, and it has even been known to have taken place after death, the fundus uteri being forced downwards by the accumulation of gases in the abdomen.

Whatever may have been the cause of this accident it is of the greatest consequence that it should be remedied as soon as possible, for every hour of delay makes the proceeding more difficult. Posture may perhaps be of some assistance to the operator, and if any particular one be adopted, that upon the knees and elbows will be the most appropriate.

(1.) *Protrusion.*—Occasionally the uterus is found to escape through various openings in the walls of the abdominal and pelvic cavities. These protrusions or uterine hernias are divided into inguinal, femoral, ischiatic, infra-pubic, and ventral. In the last form the uterus escapes through an accidental separation of the abdominal muscles. These displacements may result from the direct influence of gravitation, or, as is more generally the case, indirectly by the weight of superincumbent viscera. Additional impetus to these gravitatory influences may be caused by straining, falls, or excessive abdominal compression. Should the uterus be impregnated when thus displaced, the direct effects of gravitation are very much increased.

In reducing all protrusions of the uterus the operator will be much assisted by placing the patient in such a position as to favour their return. In following out this direction it may be necessary, in order to obtain the full aid of gravitation, to place the patient in apparently strange positions; but, however extraordinary these may be, they should nevertheless be unhesitatingly adopted.

7. The Fallopian Tubes.

Unless enlarged by disease these tubes are scarcely of sufficient weight to suffer much displacement from the direct

effects of gravitation ; indirectly, however, they are not unfrequently liable to considerable dislocation.

(a.) *Prolapsion, &c.*—The Fallopian tubes are dragged down by the uterus whenever it becomes prolapsed or inverted ; they may also be caused to descend by ovarian prolapsion, or by tubal pregnancy, or in fact any disease which causes their enlargement.

It may be generally stated that all the displacements of the ovaries and uterus cause corresponding movements in the tubes ; they may be dragged to either side, backwards or forwards, or they may even be protruded with uterine or ovarian hernias.

(b.) *Elongation.*—When a Fallopian tube is displaced by an ovary dragging upon one end of it, the other being held in situ by the uterus, or vice versâ, a stretching or elongating process takes place, which may proceed to such an extent as to produce rupture and division of the tube.

The postural treatment of these displacements is identical with that of the dislocated organs which cause them.

8. *The Ovaries.*

Floating about at anchor in the pelvic basin, the ovaries readily drift in every direction, in obedience to the various forces which act upon them. In their normal condition, owing to their peculiar function, they are liable to considerable structural variations, and, in consequence of these, they may at one time be small and anemic, and at another large and hyperemic. In this latter condition they are, from their increased weight, more liable to be affected by gravitation.

(a.) *Prolapsion.*—This is the most frequent form of displacement to which the ovaries are liable. Its occurrence is favoured by debased pelvic inclination, relaxation of their ligaments and suspending structures, long continuance of the

erect posture, or any diseased condition which augments their bulk. Indirectly, they may be prolapsed by the superincumbent pressure of abdominal viscera, tumours, &c., or they may be drawn down by the uterus when in a state of prolapsion or inversion.

The postural treatment of this displacement is ably described by Dr. Rigby as follows: "We shall find the prone couch not only a valuable means for giving ease to the patient, but of gradually restoring the displaced organ to its natural position. The position on the knees and elbows for a minute or two before assuming the ordinary prone position is frequently of great value, and the patient becomes instantly aware that the ovary has moved by the sudden relief which she now experiences."

(b.) *Ascension*.—It has been stated that the liability to prolapsion is increased when the ovaries are enlarged by any physiological or morbid process. But there is a limit to this rule, for when they become too large to be contained in the pelvic cavity, a movement in the opposite direction takes place, and the displacement in this case must be called ascension of the ovary. Ovaries, when enormously enlarged, reach, during the recumbent posture, the very summit of the abdominal cavity, pressing upon and impeding the action of the thoracic viscera, and obliging the patient, as the only mode of obtaining relief, to spend day and night with her body in an almost upright position. The ovaries may also be dragged upwards by the uterus when far advanced in pregnancy or enlarged by morbid growths.

(c.) *Protrusion*.—The causes which produce prolapsion may also effect protrusion. The various forms of this displacement have been divided into inguinal, crural, ischiatic, and ventral.

In their treatment posture may be found useful not only

in replacing, but in retaining the ovary in its proper position. The suitable posture in each case will suggest itself to the operator.

9. *The Rectum.*

This being an important pelvic organ, and intimately connected with or related to the female generative organs, some mention of its displacements seems necessary.

(a.) *Prolapsion.*—Direct prolapsion of the rectum is usually caused by exertion or straining when the body is erect. A hyperemic condition of the mucous membrane and a relaxed condition of the sphincter favour its occurrence. Rectal prolapsion also accompanies partial inversion of the posterior vaginal wall (rectocele), and it may also be caused by uterine prolapsion.

The knee-elbow posture will be found the best for reducing these displacements, and the maintenance of the recumbent position will materially assist any other special treatment which may be required.

CHAPTER III.

HYPEREMIC DISORDERS OF THE PELVIC ORGANS
PRODUCED BY POSTURE.

HAVING already pointed out in a general way the large vascular development which exists in the female pelvic organs, it will be readily understood how proportionately they must be liable to all those morbid changes which have their origin in abnormal blood supply. It having also been shown how the amount of blood circulating in the vessels may be increased and diminished by postural influences, our task will now be to consider this subject still further, and endeavour in the first place to determine how far gravitation may produce the hyperemic disturbances so frequently met with in the pelvic viscera ; and secondly, briefly to enumerate these, and indicate their appropriate postural treatment.

Since the time of Harvey, those who have devoted most time to the study of hemostatics have, as a rule, paid the greater part of their attention to the influence of the heart's action upon the blood. Chemists and pathologists have also with infinite pains investigated its composition and morbid conditions. The ways in which it is affected by the potent and ever-acting power—gravitation, have, however, it must be acknowledged, not been observed with a corresponding amount of minuteness and scientific accuracy ; nor have many disorders, the origin of which may with certainty be attributed to gravitatory factors, had these essential elements in their etiology sufficiently recognised.

The pelvic disorders of hyperemic origin fairly attributable to posture are chiefly the following :—varix, hemorrhage, hematoma, thrombosis, hypersecretion, edema, hypertrophy, ulceration, and hyperesthesia. These will now each be considered in their relations to the various organs and parts affected.

1. *Hyperemic Disorders.*

(a.) *Hyperemy*.—Synonyms : congestion, chronic inflammation, catarrh, irritation, plethora, engorgement, turgescence, determination of blood, fluxion.

Andral was the first to use the word hyperemy, or rather its Latin equivalent *hyperæmia* ; and he defined it as “a lesion of the circulation, in which the quantity of blood in the capillary system is preternaturally increased.” Trousseau has defined it as “a non-inflammatory collection of blood in a part.” This is perhaps the best general definition of hyperemy which can be given, and it will be more readily accepted and live all the longer, inasmuch as it does not enter into particulars.

Hyperemy is an abnormal condition every one can understand. Its existence has been recognised and admitted by medical writers in all ages, and every year its importance in pelvic pathology appears to be receiving more consideration. It is no new idea to attribute the origin of many disorders to excess of blood in the vessels, for every one must be familiar with the celebrated maxim of Stahl—“*plethora omnium morbores mater*.” Irritation, not long ago, held an important position in the causation of disease, but this term has been superseded by inflammation, which in like manner seems destined to be supplanted in a large degree by hyperemy.

Hyperemy may be divided into active and passive.

(b.) *Active hyperemy* includes all fluxions (the increased affluxions of arterial blood), whether of physiological, traumatic, chemical or morbid origin.

(c.) *Passive hyperemy* (the retarded efflux of venous blood) may be subdivided into hypostatic, mechanical, and hypocardiac; the first being due to gravitation, the second to obstruction, and the third to diminished cardiac action.

Although the active forms of hyperemy are capable of being intensified and protracted by gravitation and position, they cannot be said to be caused by them. The passive forms, on the other hand, whilst they are liable to be aggravated and perpetuated by the active, are almost entirely caused by postural influences. It is with passive hyperemy, therefore, that we have most to do, and it will consequently be necessary to consider carefully those forms of it which may with certainty have their origin attributed to posture.

(d.) *Hypostatic hyperemy* may be defined as a dilated condition of the veins, and venous capillaries produced or perpetuated in dependent parts by the distending influence of gravitating blood. A good example of it is given by Isidor Bourdon, who writes:—"One evening in the summer the heat was so intense that, returning home with the intention of studying, I was forced to throw myself for some moments on a couch to recover that perfect calmness indispensable to serious thought. In this position, as favourable to meditation as repose, I gave myself up to some reflections on physiology, when I perceived that the nostril corresponding to the side on which I reposed ceased almost entirely to permit the passage of air, and that respiration became more and more difficult. I turned then mechanically on the opposite side, and soon after the nostril at first obstructed became free by degrees, whilst the other, being now the lower, was affected and narrowed in its turn. This option of

contracting the two nostrils, a contraction which coincided precisely with the inclination of the body to either side, soon fixed my attention. I then turned myself on my back, and I observed in this last attitude that the nostrils remained entirely free." These interesting observations show the influence of blood gravitating in the venous capillaries. The same effect occurring in the larger veins has already been alluded to as being readily seen at the back of the hand when the arm is dependent.

(e.) *Mechanical hyperemy* occurs as a postural result next in frequency to hypostatic. It may be caused either by obstruction produced in the displaced veins of organs gravitating out of their normal positions, or by organs or tumours falling hither and thither, and directly compressing the veins which convey blood from the pelvic viscera. In both the result is the same—an excess of blood in the dilated vessels upon the capillary side of the obstruction. In this form more than any other the veins are liable to become greatly distended, as the heart continues to pump the blood into the obstructed vein, which has become little better than a blind appendix.

(f.) *Hypocardiac hyperemy* is caused by diminution of the heart's action ; and this, as has already been noticed, may be produced by posture. Whenever the body is at rest, the heart beats less frequently, and contracts less powerfully. If the resting position be such as to favour the production of hypostatic hyperemy, this condition must necessarily be increased by the slackened impetus of the blood current, for it is chiefly upon the arterial vis a tergo that the venous stream now depends for its momentum.

Postural hyperemy of the pelvic organs and tissues may therefore be produced by any one or more of the three passive forms here mentioned. To determine in what pro-

portion they are concerned in causing hyperemic disorder, and to understand the peculiar influence which each or all may have upon the pelvic organs individually or collectively, will demand of the practitioner patient and careful investigation.

2. *The Vulva.*

As a general rule, it may be accepted that the venous circulation of the most dependent part of the body is always more or less retarded. This being the case, it would naturally be expected that the vulva, occupying as it does the lowest portion of the trunk, must be particularly liable to become hyperemic, and the seat of various consequent disorders. The vascular supply to the external genital parts is unusually large, some of them possessing the faculty of erectility. They are also subject to reiterated active hyperemic influences. Those, therefore, who sit the greater portion of their lives must expose themselves to many disorders which women more actively employed escape. Those also who adopt the dorsal reclining position during the greater part of the day are equally liable to be affected by disorders following a distended condition of the blood-vessels. They are perhaps even more subject to consequent mischief, as they are deprived of the remedial counterpressure of the surface upon which the parts of those sitting rest.

(a.) *Varix.*—Varicosity may be looked upon as exaggerated hyperemy. The veins being habitually distended with blood become dilated, gradually increase in size and at length assume the peculiar and well-known convoluted appearance. The pudenda are not unfrequently affected with varix. Its origin is generally mechanical, and its most frequent cause is the gravitation of the pregnant uterus upon the larger venous trunks compressing them and thereby preventing the return of the blood to the pelvis. It is however

sometimes unconnected with pregnancy and may result from mechanical hyperemy produced by tumours or dislocated organs, or by impeded venous reflux of a hypostatic character.

This affection although apparently simple and inoffensive, may from the serious consequences which are liable to ensue, become one of very grave importance. No pains should therefore be spared in endeavouring to prevent its occurrence. Women when pregnant or suffering from large abdominal tumours should not remain too long in an upright posture. Fresh air and moderate exercise are necessary for the health, but when at rest they should recline or lie down.

(b.) *Hemorrhage*.—Bleeding from the vulva is usually caused by the rupture of varicose veins. In some cases this accident is determined very easily, by a slight fall or sudden effort, but is most generally occasioned by the passage of the child's head in parturition. In whatever way it may happen it is always a very serious accident, the hemorrhage being often so great as to threaten and in some cases destroy life.

To check loss of blood from the vulva, the hips should be raised considerably above the level of the rest of the body, for the sanguineous fluid in varicose veins is peculiarly under the influence of gravitation, and will run hither and thither in obedience to it, and in accordance with the varied positions of the body.

(c.) *Hematoma*.—Vulvar hemorrhage instead of escaping externally, sometimes finds a home in the lower cellular tissue of the labia, and produces tumours varying in size from a hazel nut to a cocoa nut. Its etiology is similar to that just described under the heading "hemorrhage."

After the effusion is completed and the tumour fully developed, postural treatment will of course be of little avail, but if it be detected early the dimensions of the clot may be materially curtailed by elevating the hips of the patient.

(d.) *Hypersecretion*.—Vulvar leucorrhea, or an increased flow of mucus from the pudenda is a normal and not unfrequent result of the active hyperemy produced by sexual excitement. This is of an intermittent character. The flow of mucus produced by passive hyperemy is more or less continuous, and results very commonly from sitting too long in the upright posture. Hypersecretion may be looked upon as one of the best signs by which inflammation and hyperemy may be differentiated, as in the former secretion is impeded, and in the latter augmented. Passive hyperemy from whatever postural cause, produces increased action in the vulvar glands and follicles, and occasions, if not an actual escape of mucus, an undue moisture of the external genitals.

The lateral reclining and recumbent postures will be found to diminish materially vulvar hypersecretion.

(e.) *Edema*.—A dropsical tumefaction of the labia is not uncommon. It is generally due to the mechanical forms of hyperemy, and more especially to venous compression produced by gravitatory descent of the uterus during pregnancy.

It is capable of being greatly relieved by postural treatment. The patient should be recommended to assume, and remain in, as far as is practically convenient, such a position as will favour the removal of the obstructing body from its point of contact with the compressed vein.

(f.) *Hyperesthesia*.—Pruritus of the vulva is an exceedingly distressing affection. It is undoubtedly often of hyperemic origin, and any of the passive forms may produce it. Exacerbations occur when any active hyperemy temporarily invades the part, and the irritation is much increased, and perhaps sometimes originated by the mucous secretions, resulting from vascular distension.

To the same causes also may be attributed the unnatural sexual excitement which sometimes torments unhappy

patients. The clitoris and neighbouring parts when hyperemic become super-sensitive and perpetually annoying.

When these symptoms exist all postural sources of hyperemy should be carefully avoided. Dorsal reclination and soft feather beds which allow the pelvis to sink below the level of the rest of the body, should be especially eschewed.

(g.) *Hypertrophy*.—Hypernutrition is the natural consequence of increased blood supply. The labia, *nymphæ*, and clitoris are the parts of the vulva most frequently hypertrophied. These affections, however, are of rare occurrence, and in this country seldom attain such importance as to attract attention or demand treatment.

(h.) *Ulceration*.—When a mucous membrane becomes highly hyperemic, it is apt to become softened. Its epithelium from hemorrhagic and serous effusions or other causes then loosens and is removed, leaving a denuded surface which often has little tendency to heal and is liable to provoke and keep up active hyperemy in the part in which it is situated. At the orifices of the vagina and urethra these ulcerations cause great local pain and constitutional disturbance, sometimes they assume the form of fissures, and at others irregular proliferation takes place, resulting in a troublesome crop of abraded vegetations.

Postural treatment will in these cases be found a valuable adjunct to other suitable remedies.

3. *The Urethra.*

The hyperemic disorders of the urethra being constantly subject to exacerbations from the passage of urine, seldom escape attention for any lengthened period. The amount of discomfort also, which they produce is so great that patients cannot long endure it, and are therefore speedily induced to seek relief.

(a.) *Varix*.—The numerous veins which surround the urethral tube are liable to become enlarged and tortuous when the reflux of their contents is impeded. At the meatus more especially, where the vessels have no controlling counter-pressure, vascular tumours frequently develop which bleed on the slightest provocation and cause great distress.

The postural treatment must in these, as in many other instances, be either prophylactic, or palliative. Alone it can scarcely be expected to be frequently radically curative. The upright posture always augments the vascular fulness and material alleviation is produced by recumbency.

(b.) *Hemorrhage*.—Escape of blood from vascular urethral tumours is sometimes very severe, the slightest touch determining it, its control may be assisted by placing the patient on her back with the hips raised.

(c.) *Hematoma*.—Blood effused into the peri-urethral tissue, which may be caused by the rupture of a varicose vein, may assume considerable importance in consequence of its compressing the urethra and causing the retention of urine. Strictly speaking, however, this perhaps ought to be considered further on under pelvic hematoma.

(d.) *Edema*.—The urethral mucous membrane is occasionally liable to become swollen by serous infiltration, and may thus have its excretory functions seriously impeded. The influence of position in relieving this condition ought not to be overlooked.

(e.) *Hyperesthesia*.—The internal surface of the urethra, and more particularly its orifice, sometimes becomes intensely sensitive, and the act of micturition is in consequence dreaded and postponed as long as possible. Posture has a marked influence in increasing and diminishing this pain, it being almost invariably worst at the end of the day, and relieved in the morning by the night's recumbency. The intensest

pain is sometimes felt in the little highly hyperemic tumours already referred to. But all this undue sensitiveness may be much relieved by postural treatment, and by it appropriate local remedies may be much aided.

(f.) *Hypertrophy*.—The urethral mucous membrane is subject to enlargement, not only by infiltration and vascular distension, but by proliferation of its proper tissues resulting from passive hyperemy. In this condition it is liable, as has already been stated, to become prolapsed and appear at the meatus in the form of a ring-shaped tumour. Rest in the recumbent posture will assist other appropriate treatment.

4. *The Bladder.*

This organ is subject to all the ordinary disorders which have their origin in passive hyperemy, and they are also capable of being much relieved by posture, more especially by dorsal recumbency with the shoulders placed lower than the hips. This position will be found to diminish the distension of the vesical veins and sensibly relieve all irritation and hyperesthesia.

5. *The Vagina.*

The extreme vascularity of the vagina causes it to suffer frequently from hyperemic disturbances, and the large venous plexuses which surround it are more particularly liable to be affected by postural influences. When the veins become obstructed by pregnancy or other mechanical causes, the walls of the vagina assume a purple hue, and are sometimes spotted with dark patches of extravasated blood. It should be remembered that as the veins and arteries run side by side, the same mechanical obstruction which retards the venous circulation must also impede the arterial, and as a consequence a form of hyperemy similar to the hypocardiac

must generally co-exist. When the force of the affluent blood is diminished its refluxion must be proportionately lessened.

(a.) *Varix*.—A prolonged hyperemic condition of the vaginal veins leads gradually to their dilatation, and they may at length be seen and felt projecting beneath the surface of the mucous membrane. This unnatural and dangerous state of the vaginal veins is generally due to the prolonged maintenance of the upright posture during pregnancy, but it may have a hypostatic origin. If pregnant women would avoid this serious complication they must never for any length of time stand, or sit erect in a chair. They may walk at appropriate intervals, but when at rest they should, as a rule, recline or lie down.

(b.) *Hemorrhage*.—The formation of varicose veins in the vaginal passage, besides acting as a mechanical impediment to the progress of labour, is a source of great danger from the violent bleedings which may occur. Fatal hemorrhage from ruptured varices in the vagina is not very rare. When it occurs, postural treatment will be found of great service. By raising the hips and lowering the shoulders the flow will be immediately diminished, and other hemostatic remedies will have their power increased.

(c.) *Hematoma*.—Bloody tumours in the walls of the vagina are sometimes observed arising from the rupture of distended veins. This may occur in labour during the descent of the child's head, or from any cause which may suddenly increase the lateral pressure upon the walls of the veins. (See pelvic hematoma.)

(d.) *Hypersecretion*.—Vaginal leucorrhea is one of the most common and persistent of all the disorders to which women are liable. There must be some general infringement of nature's laws to account for this. It is originated, no doubt,

in many different ways, but posture has certainly an important influence in its production. Some of the more active causes are, while they last, perhaps more potent than the passive ; postural hyperemy, however, in its three forms is so continuously acting and increasing in energy when improper positions are persistently maintained, that it is impossible not to assign to it a considerable share in the etiology of vaginal hypersecretion. Prolonged standing, sitting, and dorsal reclination are frequent causes of this disorder, and during pregnancy it often occurs in consequence of the pelvic venous stasis produced by uterine pressure.

Position has the same power of relieving vaginal leucorrhea as it has of initiating it. Moderate walking exercise should not be avoided ; but when at rest, the lateral or prone reclining, and recumbent postures will be found not only to diminish the discharge, but to relieve the accompanying symptoms.

(e.) *Hypertrophy*.—Besides the increased development of the mucous lining of the vagina, fibroid, cystic and polypus growths are sometimes met with, all of which may have their origin in postural hyperemy or in effusions arising from it.

(f.) *Hyperesthesia*.—When a mucous membrane becomes hyperemic its nervous susceptibility is also apt to become exalted. This may appear as vaginal pruritus and vaginitis, two very distressing disorders, notoriously difficult to cure, and not unfrequently owing to the resulting dyspareunia embittering and wrecking connubial happiness. In the treatment of these cases the medical man with other therapeutic or operative means will be wise to avail himself of any assistance he may possibly gain by prescribing such postures as have a tendency to reduce pelvic hyperemy.

6. *The Uterus.*

Of all the organs in the body the uterus is most liable to suffer from hyperemic disturbances. During the sexual life of a woman, it is never for one moment in a quiescent state. The changes it undergoes in fulfilling its various functions are peculiar to itself, and have *no* physiological analogues. It is profusely supplied with blood-vessels, which are ever receiving fresh affluxes of blood to supply the demands of its various functional actions. In rapid succession active hyperemias take possession of the uterus. If at the same time its vessels should be habitually distended by impeded venous reflux the organ must necessarily increase in size, and present in due time all the usual hyperemic *sequelæ*.

(a.) *Varix*.—An unduly dilated condition of the uterine veins is in all probability not a very unusual affection. It is rarely observed in post-mortem examinations, because after death all vascular distension ceases and the abnormal appearance becomes so obliterated as to escape attention. Occasionally varices of the cervix are detected during life by means of the speculum and their existence is also sometimes made known during or after labour in consequence of the hemorrhage which their rupture causes—this condition, although perhaps more frequently found in the neck of the womb, is not confined to it. It doubtless often exists in its body, where, in fact, varicose aneurism has been noticed. It is difficult not to attribute to a permanently dilated state of the uterine veins some of those tiresome cases which baffle all treatment and continue for years to give symptomatic evidence of firmly established hyperemy.

Prolonged postural anti-hyperemic treatment will certainly reduce the varicose distension, and give the veins a chance of returning to their normal calibre.

(b.) *Hemorrhage*.—Although sometimes so disastrous in its results, it is perhaps on the whole a great advantage that an organ so profusely supplied with blood as the uterus, should be able to part with its superabundance readily. Metrorrhagia, or bleeding from the internal uterine surface, frequently takes place in consequence of simple passive hyperemy. If the superficial vessels, either from gravitation or obstruction become too full, like a safety valve, they open and an attempt is made to restore the equilibrium. When morbid conditions of hyperemic origin also exist, hemorrhage is still more liable to occur, for by the active hyperemy which their irritation causes, the veins become doubly distended and the hemorrhage proportionately increased.

The employment of posture in the treatment of metrorrhagia is most satisfactory. Its influence for good or evil is so vividly conspicuous, that it cannot possibly be disregarded. If a woman flooding be made to assume the upright posture for a short time, the effect of gravitation upon the blood by accelerating its flow at once becomes evident. It is most important, therefore, that every woman suffering from uterine hemorrhage should be immediately placed in a recumbent position with the hips raised as far above the level of the shoulders as can be conveniently effected.

(c.) *Hematoma*.—Extravasations of blood, sometimes called uterine apoplexies, are generally caused by the rupture of varicose or weak-walled vessels. They are also probably determined by sudden hyperemic action, for it has been observed that the cases in which they have occurred have been accompanied by sanguineous effusion from the internal uterine surfaces.

In all cases of metrorrhagia, as has just now been advised, recumbency should be observed. This injunction must have its strength augmented, when it is remembered that blood

may at the same time be escaping in the uterine tissue, and that the size of the resulting clot must be regulated by the intensity of the hyperemy, whether it be of an active or postural origin.

(d.) *Hypersecretion*.—Every gynecist is only too well acquainted with the glairy tenacious mucus which hangs about the os uteri, and can scarcely be wiped away. He also knows when he sees this secretion that he has before him a case which will probably prove very obstinate, and test his resources and patience to the uttermost. The cause of this discharge is a hyperemic condition of the cervix, and its source is the glandular structure of the cervical canal. Perhaps the cervix being the lower portion of the uterus is more frequently subject to hypostatic hyperemy than the body, but however this may be, any increase of blood supply acts at once upon the glands, and results in mucous hypersecretion. Immediately after denudation, and before the glandular structure of the body has become developed, of course all mucous flow from that portion of the uterus must cease. Any excessive escape of mucus from the os uteri must be looked upon as an unmistakable symptom of hyperemy. Whether this be of an active or passive character, the history of the case can alone decide. Whatever decision, however, may be arrived at, the adoption of postures unfavourable to pelvic hemostasis will be found materially conducive to the success of other appropriate treatment. No remedy will permanently cure uterine leucorrhea if the patient from choice or necessity continues to spend the greater part of her life standing or sitting in the upright or semi-erect positions.

(e.) *Edema*.—A hyperemic condition of the uterus cannot long exist without being accompanied by watery effusion into its substance. In consequence of this transudation the organ

becomes larger, softer, and more liable to displacement. Fibroid tumours of the uterus are also liable to become edematous, and they and it when affected in this way, are apt to vary rapidly in size according to the posture assumed. A night or a day or two spent in bed reduces their bulk very sensibly.

This fact sufficiently indicates the appropriate postural treatment.

(f.) *Hypertrophy*.—The increased afflux of blood which takes place during the processes of nidation and gestation results in the normal hypertrophy of various parts of the uterus. If a similar increased supply of nutritive material be produced mechanically, new formations also arise, and the mucous muscular and connective tissues of the uterus become overgrown. Uterine hypertrophy in its various forms is exceedingly common. It may be diffused, circumscribed, partial, &c., but whatever shape it may assume, it may originate entirely from hyperemy of a passive character. It is curious that these growths may themselves be affected by the same form of hyperemy which brought them into existence, the most dependent portions of them becoming distended by hypostatic hyperemy, followed by hemorrhage, hematoma, edema, ulceration, and disintegration. How far these new formations are capable of degenerating into those of a malignant type has not been positively decided. Proliferation of the connective tissue seems to a certain extent to have a curative influence by rendering the uterus so dense and hard as to resist further hyperemic distension. On the other hand, when it exists in undue proportion, it supplants the other tissues, and seriously interferes with the functions of the organ.

It is not uncommon to be able to trace hypertrophic conditions of the uterus to passive hyperemy of postural origin.

Once in existence they have a twofold power for evil. By their presence they determine active hyperemy in their own immediate region, and by their size and weight they displace and press upon the bloodvessels, and increase the hyperemy, which originally produced them. Postural treatment, therefore, must not be neglected in these cases. By its means the hypostatic form of hyperemy must be combated ; and by the maintenance of suitable positions, the mechanical hyperemy due to displacements ought to be relieved if not remedied.

(g.) *Ulceration*.—Simple erosion of the cervical, or most dependent portion of the uterus, is extremely common. It is usually due to a hyperemic or varicose condition of the mucous membrane, and according to its site and duration, assumes various forms and degrees of intensity. It may be caused from without by irritating discharges, or from within by serous or sanguineous effusion ; but these it will be observed are secondary hyperemic affections, still further tending to show how largely ulcerations of the uterus may originate in a hemorrhagic distension of its vessels.

In the treatment of these lesions, position has a marked influence. The recumbent posture always alleviates them, reduces the pain and discharge which accompany them, and supplemented by simple hygienic rules, proves sufficient in some recent cases to effect their cure.

(h.) *Hyperesthesia*.—A great deal has been written upon this subject under "irritable uterus," and various other names. Hyperemy of the uterus is seldom long disassociated with undue sensitiveness ; and that this hyperemy is intimately connected with posture is proved by the fact, that the uterine pain is brought on or increased by kneeling, sitting, or standing, and sometimes even by the slightest change of position.

Recumbency, as a rule, relieves this painful affection, and this is particularly necessary when any functional active hyperemy also makes its appearance. Removing every tendency to pelvic blood stasis, will materially assist other appropriate treatment.

7. The Fallopian Tubes.

Although diseased states of the Fallopian tubes are often difficult to diagnose accurately during life, and all signs of vascular distension in them disappear, or are difficult to detect after death, there can be no doubt that they are frequently affected by hyperemy and varicosity, leading to all the consequent morbid conditions.

Obscure as these are when they occur in the tubes, the practitioner will occasionally be able to give relief by remembering the influence of posture. If the right be hyperemic, the left lateral recumbent position will alleviate, and *vice versa*. If, on the other hand, the right be hypertrophied or distended, the painful dragging sensation will be removed by lying upon the side affected.

8. The Ovaries.

An organ which is constantly and directly subject to the active hyperemy accompanying ovulation, and indirectly to fluxions sympathetic with other generative functions, must be peculiarly apt to have these vascular repletions augmented and perpetuated by the passive or postural forms of hyperemy.

(a.) *Hemorrhage*.—Bleeding from hyperemic or varicose vessels rupturing upon the surface of the ovary, has been known to take place to such an extent as to cause death. It is, as we shall see further on, a not very rare cause of pelvic hematoma.

(b.) *Hematoma*.—Ovarian apoplexy, as it is sometimes called, is not uncommon. In post-mortem examinations effused clots are found, varying from the size of a pea to that of an orange. The escape of blood may take place either in the follicles or the stroma, and although the amount poured out may be influenced by position, the time of its occurrence must be so uncertain as to render postural treatment of little avail.

(c.) *Hypertrophy*.—Increased growth of the stroma, and more particularly of the tissues surrounding the follicles in the ovary, is a hyperemic consequence of the deepest interest; for this appears to be the commencement of the enormous cysts which prove fatal to so many women. "The starting point of this increase of liquid is almost always more or less prolonged hyperemy of the ovaries. This hyperemy, as may be easily understood, is communicated to the walls of the follicles, and is thus the cause of the hypersecretion which takes place upon their internal surface. But in order that the liquid thus secreted may remain in the Graafian follicles, it is necessary that the rupture of the walls of the latter be rendered impossible in consequence of an hypertrophy (Scanzoni).

(d.) *Hyperesthesia*.—Ovarian hyperemy is seldom unaccompanied by pain more or less acute. Sometimes it is excessive and surrounded by symptoms of a complicated and various character.

Oophoralgia is generally relieved by recumbency. Exercise, which is so necessary for the health, may be taken with tolerable comfort, if the ovaries be supported by a suitable mechanical appliance.

9. *The Rectum.*

No one fails to observe the influence of posture in producing rectal disorders. Some of them are so common

and are so generally attributed to passive hyperemy, that it would be a waste of time to bring evidence in support of the fact; at the same time it must be admitted, that the potent influence which rectal diseases have upon the other pelvic organs is not sufficiently appreciated, nor is their mode of detection and treatment carried out with the assiduity which their importance demands.

(a.) *Varix*.—Undue distension of the hemorrhoidal vessels is the cause of a large amount of discomfort and continuous acute pain among women. Sitting a great many hours during the day at an occupation which demands little or no movement of the body, and venous obstruction caused by the pregnant uterus, tumours or feces pressing upon the trunks of the larger veins, are the more common conditions which produce varicosity.

(b.) *Hemorrhage*.—Distended hemorrhoidal veins bleed easily and freely, and sometimes to such an extent as seriously to affect the health of the patient and demand treatment. The hemorrhage can always be checked by the recumbent posture with the hips raised.

(c.) *Hematoma*.—Piles, which are produced by an escape of blood from the varicose veins into the tissue about the anus, are too well known to require more than mere mention. The influence of posture is also well understood, for the patient soon finds how much the pain is aggravated by standing, and relieved by lying down. The proper treatment is thus suggested in a forcible way, and if possible usually adopted at an early period.

(d.) *Ulceration*.—Other very painful results of rectal venous distension, are the ulcers and fissures which appear at the margin of the sphincter. These are not unfrequently found when the hyperemic or varicose condition of the region has become chronic.

Posture relieves or increases the pain, but it can only be in very slight cases that a cure can be expected to result from the most careful observance of the recumbent position. When the surgeon has done his work however, he knows well what advantage is to be gained by keeping his patient in bed during the healing process.

(e.) *Hypertrophy*.—Under the influence of increased blood supply, the rectal mucous membrane is liable to become softened and hypertrophied, and in this condition is not unfrequently subject to prolapsion. The enlarged and edematous mass appears outside the anus when the upright posture is long maintained, or during exertion.

The knee-head-descending position will be found most convenient in returning it, and it can be kept in its place by recumbency whilst other proper treatment is employed.

10. *The Pelvis.*

General pelvic hyperemia due to posture must be a condition constantly recurring. By gravitation the blood naturally falls into the bony basin at the lowest part of the erect body, and in this position the venous reflux is liable to be impeded by organs descending and compressing the larger blood-vessels. The hyperemia thus produced may be short lived and evanescent, but if when at rest the erect posture be adopted solely during the greater part of the day for months or years, permanent enlargement of the vessels of the whole pelvic viscera must take place, and the entire cavity must continually contain too large a quantity of blood. The symptoms which this condition produces are feelings of fatigue, weight, and aching; or sometimes actual pain results, increased by walking or driving, and causing the patient to assume a bent position when standing or walking.

Pelvic posture has also a decided influence in producing

passive hyperemy of this region. Debased pelvic inclination, which has already been alluded to (p. 31), by allowing the viscera to gravitate more directly into the cavity of the pelvis, favours displacement of the organs and vessels, and consequently the existence of mechanical hyperemy. An erect bearing is as necessary to prevent hyperemy as displacement.

What may be called exercise of the pelvic viscera seems to be necessary for their well-being. The pelvic veins appear to depend in a great measure upon the pressure from without which the constant movement of the parts surrounding them produces, for accelerating the onward flow of the blood which they contain. The unyielding walls of the pelvic cavity considerably reduce this expediting influence, and it is again further curtailed when sitting, by the floor of the pelvis also becoming an unyielding wall. That this exercise is necessary to insure free circulation, seems proved also by the fact that any morbid condition which has the effect of fixing the pelvic organs, invariably results in increasing the hyperemy of the parts affected.

(a.) *Varix*.—The venous trunks and plexuses which lie embedded in the pelvic tissues, are probably liable to become varicose more frequently than is generally supposed. Although this condition may produce no well-defined symptoms, and may after death be difficult to discover, nevertheless it may lead, as will be presently shown, to very serious if not fatal consequences. When the parts accessible to the eyes, the vulva, vagina, uterus, and rectum, are found to be varicose, a similar condition of all the hidden intra-pelvic contents may be suspected, and more particularly of those large venous plexuses which convey the blood from the vagina, uterus, and ovaries.

Maintaining the body motionless in the erect posture is the most frequent cause of varix, with the exception of the

pressure of the gravid uterus. A striking example of the influence of position in producing varicose veins is shown by the immunity which tailors enjoy from this affection in their legs. Always resting in a horizontal position, the veins of their limbs are never subjected to undue distension by blood gravitation. If women when at rest would lie down, they would also escape many hyperemic troubles of the pelvic organs.

(b.) *Hematoma*.—Pelvic hematoma has been divided into extra- and intra-peritoneal. Rupture of a distended pelvic vein is perhaps the most frequent cause of this dangerous escape of blood. When intra-pelvic varix exists, hematoma may be determined by long continuance of the upright position, by a fall, or by any sudden exertion, and either of these acts more potently at the periods when, owing to some functional action of the reproductive organs an active hyperemy of the pelvic contents exists. The veins in the broad ligament are those which give way most frequently, but the tubal, uterine, and vaginal may each be the seat of the lesion. The point of rupture determines whether the blood effused shall collect in the peritoneal cavity or in the extra-peritoneal connective tissue. When the hemorrhage is intra-peritoneal, posture has much to do with deciding at what point the resulting hematoma shall be. In every position except the lateral and prone recumbent, the blood naturally gravitates into the retro-uterine pouch, and consequently here is most commonly found the site of pelvic hematoma. The situation of the extra-peritoneal variety is not so much subject to gravitation, its position being determined by the anatomical boundaries of the point of rupture. There is scarcely a region, however, in the neighbourhood of the pelvic organs in which blood tumours of varying sizes may not be found.

It is well-known that pus has a tendency to burrow by gravitation and abscesses to open at the most dependent parts; it may be worth considering whether posture might not be advantageously employed in endeavouring to direct the contents of suppurating hematomas to a safe site of exit. Position may certainly be used with good effect, if the patient be seen sufficiently early, in controlling the amount of blood effused by ordering her to lie down with the hips raised.

(c.) *Thrombosis*.—A serious result of postural hyperemy is the formation of clots in the stagnant blood of varicose veins. During pregnancy the womb may fall and so compress the iliac veins as to cause distension of the whole venous system of the pelvis and lower limbs. In the most largely dilated portions of these vessels the circulation may be so tardy as to be insufficient to preserve the blood in a fluid condition, and coagula may form. Should this take place, a period of danger arrives when parturition is over and the distended vessels begin to resume their normal calibre. The thrombi are then liable to disintegrate and become detached and displaced causing embolism, and sometimes death by entering the pulmonary artery.

Should this accident occur, absolute rest in the recumbent posture is necessary. Sudden death may result from the patient assuming the erect or sitting posture. In all cases of varicosity caused by pregnancy, exercise should be very carefully commenced after delivery.

(d.) *Edema*.—Serious effusions into the pelvic connective tissue, although they may be primarily determined by active hyperemy, are nevertheless capable of being much increased by posture. It is remarkable how rapidly the swelling in the roof of the vagina will grow larger or subside as the erect or recumbent positions are assumed.

It is always safer when these swellings are detected, to advise recumbency, for it is impossible to tell whether the tumefaction will turn out to be simply an evanescent exudation, or a plastic effusion ending in inflammation and supuration.

(e.) *Hyperesthesia*.—Pain or uneasiness is commonly caused by general pelvic hyperemy. An active hyperemic condition of the pelvic contents, which may be painless when in the recumbent position, will often prove intolerably painful when the passive hyperemy of the upright posture is super-added. Relief can only be obtained in one way, and pain, the great protector of the body in such cases, emphatically orders the sufferer to lie down and unload the pelvic vessels.

Another form of pelvic pain is caused by the pressure of the enlarged uterus upon the sacral nerves. In a hyperemic state it is peculiarly subject to displacements, and the consequent dragging upon the nervous filaments is a frequent source of uneasiness, the nervous disturbance produced by one or other of these causes, sometimes only amounts to a feeling of numbness, but occasionally it reaches a degree of pain almost unbearable. Both the numbness and pain may radiate to the trunk, limbs and head, and relief can only be obtained by the patient assuming such an attitude as will relieve by gravitation the nervous stretching or compression.

CHAPTER IV.

INFLUENCE OF POSTURE UPON THE FUNCTIONS OF THE PELVIC ORGANS.

IT follows as an inevitable sequence that the influences which produce such varied effects upon the positions and nutrition of the pelvic organs must also materially affect their functions. Attention is therefore now invited to the manner in which these physiological actions may be modified by posture.

1. *Ovulation.*

Posture has not probably a very marked influence upon this function. It is, however, a well-known fact that the reproductive life of a woman may be modified by many causes within and without the body. Ovulation is not an unconditionally continuous periodic function. The maturation and discharge of ova may be controlled artificially. If a hen be prevented from sitting, ovulation will continue uninterrupted for months. In the human female ovulation may be checked by gestation, lactation, and exhausting diseases.

It is also certain that it can be accelerated by postural causes. Any of the corporeal positions which tend to increase the quantity of blood in the pelvic organs will hasten the approach and intensify the action of the reproductive faculty; and as the secondary manifestations of generative power, which are the evidences of ovarian activity, depend upon ovulation for their existence, it is evident that this function can be prematurely established by posture. Girls who lead

sedentary lives arrive at the period of puberty, and have the signs of sexual life developed at a much earlier period than those who spend their time in the air and take a great deal of exercise.

It is possible that the same causes may have the effect of delaying reproductive death. If the approach of the final "change" results from general nutritional decrepitude, an artificial supply of blood to the ovaries may for a time postpone the fatal moment.

The last act in the function of ovulation, which has been called ovarian parturition—namely, the expulsion of the ovum from the Graafian follicle, may be determined by posture, for when the follicle is distended to bursting point any sudden change of position or exertion will cause its rupture. It is not improbable that the act of copulation often has this effect, for in the normal copulative posture the penile succussion is intensified by the co-existing superincumbent weight and consequent abdominal pressure.

2. Anomalies of Ovulation.

Hyperemy of postural origin may cause ovarian hyperesthesia and pain in the development of the Graafian follicles. It may also hinder or prevent altogether the rupture of a follicle by producing hypertrophy of its walls. This condition is doubtless also a cause of painful ovulation.

Owing to postural displacement of the ovary, the escape of an ovum may be made to take place at a point so distant from the fimbriated extremity of the Fallopian tube as to jeopardise its existence, or lead to its abnormal development.

3. Tubulation.

Under this name it is convenient to consider the functions of the Fallopian tubes. These functions are remarkable from

the fact that the same tube has the office of transmitting spermatozoa in one course, and ova in another. The male urethra is an example of a canal having the double office of transmitting urine at one time and semen at another. This is sufficiently unusual to be notable, but in tubulation we have a duct used for the passage of two distinct matters, with this extraordinary addition, that their lines of progression are in exactly opposite directions. These two functions are seminal and ovular.

(a.) *Seminal Tubulation.*—The influence of posture upon this function must be very small. It is quite possible, however, that the seminal fluid, having entered the cavity of the uterine body, may gravitate towards the orifice, or even along the dependent tube.

(b.) *Ovular Tubulation.*—The passage of ova along the Fallopian tubes is perhaps less affected by position than the transmission of spermatozoa. Ovular tubulation is an active, while seminal is a passive function. In one the ova are inactive and the tube active; in the other the spermatozoa are active and the tube inactive. The effect of gravitation upon an ovum must be so small as to be of little practical importance.

4. *Anomalies of Tubulation.*

Although normal tubulation is so slightly affected by posture, conditions may arise which give it the power of seriously disturbing the function, and sometimes of producing even fatal results.

(a.) *Obstructed Tubulation.*—Postural hyperemy by producing hypertrophy and varicosity of the tubes diminishes their calibre, and impedes or prevents their functions of transmission. Dislocations, also of postural origin, have the same effect, and both may eventuate in sterility or extra-uterine gestation.

(*a.*) *Sterility.*—If a Fallopian tube be occluded by any of the above mentioned means, sterility must result, for although it may not be necessary for the seminal fluid to penetrate the tube, it is certain that, to insure impregnation, successful insemination cannot occur if transmission of the ovum is prevented. This, however, is only true to a limited extent, for it must be remembered that an ovum may leave the ovary of one side and be fecundated by spermatozoa which have passed along the Fallopian tube of the opposite side. Both ova and spermatozoa have a migratory power in the abdominal cavity, and the movements of both may be influenced by the temporary or permanent displacements of the abdominal and pelvic viscera.

(*β.*) *Abdominal Gestation.*—Whatever prevents a fecundated ovum from entering the Fallopian tube may be the cause of abdominal gestation. Some of these causes are postural, either directly or indirectly. Any displacement which removes the ovary from the fimbriated entrance of the tube may lead to death of the ovum, or in exceptional cases to its development in the abdomen. Movements of the viscera adjacent to the ovary may alter the normal progress of the newly escaped ovum and prevent its reaching its destination. Many fecundated ova are doubtless lost in this way. Nature is, however, so bountiful in her supply of eggs to the human ovaries that the loss of a few in this harmless manner is of little consequence.

(*γ.*) *Tubal Gestation.*—This form of extra-uterine gestation is certainly not infrequently due to postural displacements. Although the ovarian extremity of the Fallopian tube may be normally situated and ready to perform its function, the onward progress of a fecundated ovum will be prevented if the tube be distorted and bent upon itself. The ovum may have been fecundated by spermatozoa reaching it from the opposite

tube, it may have been seized in the usual way and carried up to the point of obstruction by ciliary vibrations, but having reached that spot, it is doomed either to die or develop.

Unfortunately the postural treatment of the anomalies of tubulation can only be prophylactic. Displacements and hyperemic disorders of the Fallopian tubes should be treated as soon as discovered, but the symptoms by which they can be detected are often so obscure as to make diagnosis difficult. In cases where sterility results from obstructed tubulation, posture might be used with advantage, but when extra-uterine gestation has been produced by the same cause, no positional precautions can be of any avail.

5. *Nidation.*

Nidation or the periodical development of the mucous membrane covering the interior of the body of the uterus, is a function capable of modification by posture.

6. *Anomalies of Nidation.*

Passive hyperemy, whether it be hypostatical, mechanical, or hypocardiac, may effect variations in the development of the nidal decidua, followed by special nidational disorders.

(a.) *Supernidation.*—Postural hyperemy may cause hypertrophy of the nidal decidua and end in the formation of a sac so tough as to resist the ordinary disintegrating process, and cause it to be expelled from the uterus whole. There seems to be a constitutional predisposition to this abnormal development in some women. When it exists it will be increased by sedentary life, debased pelvis, and all the gravitatory causes which fill the uterine blood-vessels and stimulate nutritive action.

(b.) *Painful Nidation.*—A week or ten days before the period of denidation many women have pelvic pains, which continue with more or less intensity until denidation has taken place. These days represent the time when nidation is most active. Painful nidation occurs most frequently in women suffering from passive hyperemy of the uterus, for when to this disordered condition is superadded the afflux of blood necessary for the formation of the nidal decidua, hyperesthesia is easily produced. Two hyperemias of postural and physiological origin unite to cause aching, weight and numberless other painful sympathetic feelings.

Patients who suffer in this way should avoid sitting or standing for any length of time. They should take a fair amount of exercise, but when not thus occupied they should recline on either side or adopt all the recumbent postures in turn.

7. *Denidation.*

As nidation has been compared to gestation, so may denidation be likened to parturition. The nidal decidua having reached its full development, and no impregnated ovum having arrived to demand from it protection and sustenance, a process of disintegration takes place; its attachments are loosened, and it is expelled generally along with the menstrual fluid by the contractions of the uterus. Sometimes it is cast out of the uterus in the shape of a triangular sac, but more frequently in small shreds. This little parturition may undoubtedly be assisted or hindered by posture, for whether the membrane be whole or in shreds it will float in the fluid of menstruation and gravitate with it.

8. *Anomalies of Denidation.*

The process of denidation may be divided into two periods,

the separative and the expulsive. During either of these stages disorders may arise.

(a.) *Premature Denidation.*—If undue vascularity exist in the nidal decidua or its subjacent tissues, exertion in the upright posture may determine its premature exfoliation. Little, however, can be positively stated upon this subject, for the pathology of the nidal decidua has yet to be studied and written.

(b.) *Obstructed Denidation.*—If the canal of the uterus be occluded by displacements, edema, hypertrophy or any of the obstructing results of passive or mechanical hyperemy, the progress of denidational shreds must be interrupted. When supernidation has taken place, less obstructive causes will produce equally difficult denidation. If the cause of obstruction be postural displacement or hyperemy, some relief may be given by prescribing counter postures.

(c.) *Painful Denidation.*—Most medical men are acquainted with the intense and unbearable pains which obstructed denidation produces. These expulsive pains are not much less acute than those of parturition. In fact, some women who have felt both, declare the former to be the more excruciating. If denidation be rendered painful by supernidation, postural treatment can be little more than prophylactic. If the pain be caused by obstructed denidation, relief will be obtained, and other remedies assisted in their action, by the employment of suitable posture.

It is necessary to be careful not to be misled by the absence of menstruation into the belief that the pain is not caused by obstructed denidation, for this peculiar condition may exist in the same way as gravidal denidation, which is sometimes observed to take place without lochiation. "There is often no menstrual secretion, but in its stead a tough, thick membrane, resembling the tunica decidua of preg-

nancy, is discharged, the uterus acting forcibly as in labour" (Waller).

9. Menstruation.

This function is capable of being influenced in many ways by posture. It may be hastened in its first appearance by passive pelvic hyperemy. It has been calculated that the menstrual discharge appears two years earlier among girls who lead a sedentary life than with those who work hard and take much exercise. For the same reason it arrives earlier with weak than with strong girls, as the former are unable to exert themselves. The quantity and duration of the menstrual flow is also affected by posture. The establishment of menstruation in young girls is with good reason looked upon as a period of anxiety. Mothers are at this time careful and considerate in many points respecting the health of their daughters. The potent influence of posture, however, is not generally appreciated, and much harm consequently takes place. Those in charge of girls are often not aware that the appearance of blood which attracts and absorbs so much attention is only a symptom, and that it represents an active condition of the whole sexual apparatus—the commencement of mature reproductive life. An increased afflux of blood to the generative organs takes place at this time, and yet ignorant of, or ignoring this fact, girls are permitted or directed to sit or stand at their lessons or employments for many consecutive hours. The effect of this is to add postural hyperemy to the existing physiological sanguineous fulness, and by thus heaping fuel on fire cause hyperemic and displacement disorders often difficult to remedy, even if by good fortune they should be discovered.

At this time of their lives it is of especial consequence that girls when at rest should be required to lie down or recline.

It matters not in what way this is done so that freedom of action and the power of easily and frequently changing the position is insured. A broad sofa, not too soft, or the floor covered with a carpet or rug and a cushion, answer every purpose. Walking exercise, games, and dancing are necessary for the general health, and should be freely encouraged, except during the menstrual flow. But during this time moderate exercise should be taken, if the flow be not excessive. Standing and sitting must be carefully avoided, or allowed only when the exigencies of modern civilization demand it.

10. *Anomalies of Menstruation.*

In considering the anomalies solely connected with this function it must be remembered that menstruation is the accompaniment of denudation, that the processes take place simultaneously, and that the disorders of one may produce derangements of the other.

(a.) *Deficient Menstruation.*—A deficient blood supply to the uterus, causing subnidation and scanty menstruation, should only in exceptional cases be treated by inducing pelvic hyperemy by posture. In many of these cases constitutional debility exists, and the temporarily extinguished reproductive life is salutary rather than otherwise. In some, however, uterine succussion is very useful, and both dancing and equitation prove efficient and reliable emmenagogues. The general health is also improved by these exercises if moderately employed.

(b.) *Excessive Menstruation.*—The results of posture, both in causing and curing menorrhagia, are well known and have been long recognised and appreciated. Passive hyperemy, before it has produced structural changes in the uterus, increases the quantity and frequency of the menstrual flow.

It is common, therefore, to find girls and women who have to pass the greater part of their lives standing or sitting suffering from large debilitating losses of blood at every period. If there be from any cause, constitutional or local, a tendency to excessive menstruation, the erect posture will almost invariably be found to increase it; as certainly also will recumbency be observed to diminish it, and still more powerfully will the controlling action be noticed if the hips of the patient be raised. For want of consideration these two effects of posture are sometimes overrated, for the flow does not cease entirely when the body is recumbent, but collects in the vagina; nor does the discharge recommence violently when the patient rises, but only then, having been pent up, gushes out. If the case be so serious as to demand prolonged recumbency, the fluid by being delayed in the vagina may become offensive. Antiseptic vaginal irrigation should then be used.

To enable the medical man to employ postural treatment successfully in excessive menstruation, the exact cause of the hyperemy from which it results must be discovered. If the excess of flow proceeds from the influence of gravitation on the blood, it must be found out which of the three forms of passive hyperemy is most concerned in its production; or if it arises from hyperemy following uterine displacement, whether it be direct or indirect in its origin. Other kinds of treatment will often be required, but attention to position, whether as a primary or supplementary curative agent, will always prove satisfactory to the practitioner.

(c.) *Obstructed Menstruation.*—The escape of the menstrual fluid may be prevented by posture in three ways. 1st. By causing hyperemy of the uterus with varicosity, edema, and hypertrophy of the mucous membrane lining the cervix, and also from the same cause supernidation with membranous

obstruction during denidation. 2nd. By producing dislocations of the uterus with flexions and occlusion of its canal. 3rd. By the gravitation of tumours in the neighbourhood of the uterus with compression of its neck at some point between its inner and outer mouth. All displacements of the uterus causing obstructed menstruation are liable to further modification from the menostasis and hematometra which result, the weight of the organ being much increased in these cases, and the influence of posture proportionately augmented.

The postural causes and treatment of all these conditions have already been considered, and need not by recapitulation delay the reader.

(d.) *Painful Menstruation.*—The pain felt during menstruation generally arises either from uterine hyperesthesia induced by hyperemy, or by expulsive pains caused by the endeavour of the uterus to overcome some resistance to the escape of the nidal decidua and menstrual fluid.

The postural treatment of painful menstruation is the same as in passive pelvic hyperemy and in obstructed menstruation. In many of these cases Nature prompts and enforces the proper positional treatment, the posture it prescribes being the only one which can be tolerated.

II. *Impregnation.*

Although impregnation embraces in its meaning many complex processes, the more important of them may be comprehended under the headings copulation and insemination.

(a.) *Copulation.*—Notwithstanding the well-known fact that conception may take place without the functions of the clitoris and neighbouring parts being brought into play, it is nevertheless true that successful copulation is more likely to occur when the natural excitement of the generative organs

is produced. The pleasurable nervous impression acts beneficially in many ways. It secures closer coaptation of the copulative organs; it promotes the secretion of the vulvo-vaginal glands, which prevents pain by affording efficient lubrication; and it produces that erection of the sexual organs which tends materially to render the act of copulation successful. The positions of the clitoris and pubic surface, which in the female are the chief sources of sexual gratification, determine the normal relative postures of the sexes during copulation, for it is only when the pelvis of the copulants are in anterior apposition that the sexual orgasm can be naturally produced. Other considerations besides those connected with delectation point unerringly to the normal copulative positions of both sexes. When the female pelvis is supine and slightly retroverted the axis of the vagina is inclined backwards and downwards: this being the case intromission of the male organ is assisted by gravitation, unnecessary fatigue is avoided, and other advantages are gained which will be referred to presently.

(b.) *Insemination.*—The ancients had extraordinary notions of the influence of copulative postures upon insemination. They were based upon the absurd supposition that one ovary supplied male ova and the other female, and that a woman by adopting one or other lateral posture during copulation might procreate boys or girls at will.

Effective insemination is best insured by the assumption during intercourse of the normal copulative posture. In this position the flow of the seminal fluid into the uterus is favoured, and not only during ejaculation, but afterwards, if the supine posture be maintained. This latter precaution is important if the vagina be large and lax. Roderic à Castro advises that the legs of a woman should be crossed and the hips raised after coition. All copulative postures

which cause the seminal fluid to gravitate from the os uteri tend to render insemination abortive, and are thus unmistakably pronounced unnatural.

The normal position in copulation has also the great advantage of causing the seminal jet to issue in the neighbourhood of the os uteri, a condition more essential to effective insemination than is generally believed.

12. *Anomalies of Impregnation.*

Many of the causes of impeded impregnation are directly or remotely due to posture, and upon the derangements produced the remedial effect of postural treatment is most satisfactory.

(a.) *Painful Copulation.*—Owing to the extreme delicacy of this subject, little mention is made of it by sufferers. Those, however, who pay special attention to the diseases peculiar to women must be struck with the frequency of its occurrence and with the misery it produces. The source of pain may have its seat in different parts. The uterus, vagina, vulva; and various regions of the body may be affected by tumours, lesions of surface, and hyperesthesia, all of which may render copulation painful.

It would be useless, if possible, to enter into a minute description of the postural treatment of these cases: each must be separately considered and treated, and in most some slight operative measures will be found necessary. As a broad rule, it may be confidently stated that any posture during copulation may be legitimately recommended if the motive be to relieve pain, promote impregnation, and remove a cruel source of domestic infelicity.

(b.) *Abortive Insemination.*—This is very frequently produced by a want of normal relation between the orifices of

the uterus and penis. It has been calculated that two-thirds of all sterile women have some form of uterine displacement. If the neck of the womb be everted in any direction from its normal axis the seminal jet will miss its aim and abortive insemination be the probable result. The same effect is also liable to occur if from some malformation or accident to the penis ejaculation takes place in an unusual direction. In some women the uterus readily tilts hither and thither with every change of position. In others it is liable to be displaced during the act of copulation. Anything which destroys the normal coaptation between the uterus and penis during coition tends to make the function of insemination fail in its effect. This is probably the explanation of the old saying, "*Si mulieres in concubitu retractent clunes et frequenter agitent, non concipiunt.*" If the penis be short, the womb high, the vagina long, or the copulants fat, the penis may never be able to reach the os uteri, in consequence of which a portion of undilated vagina remains between the two, impeding seminal progress. In these cases effective insemination may be insured by the prone copulative posture, which allows the penis to penetrate more deeply ; or by the erect posture, which depresses the uterus and brings it more within range of the seminal jet. An interesting case is given by Roubaud, in which the last-mentioned position cured sterility resulting from uterine version. "*J'ai connu une dame, mère de quatre enfants, dont les rapports sexuels ont toujours eu un résultat négatif dans la position horizontale, et que, les quatre fois où elle est devenue mère, elle a été fécondée alors que le bassin se trouvait dans la position verticale.*" It is scarcely necessary to follow this subject further. The intelligent practitioner will readily understand how antrorsion, retrorsion, dextrorsion, sinistrorsion, ascension and prolapsion of the uterus may by pelvic posture and gravita-

tory influence be temporarily remedied during copulation, and effective insemination secured.

For some remarks upon abortive insemination due to abnormal conditions of the Fallopian tubes the reader is referred to the section "Anomalies of Tubulation."

13. *Gestation.*

The influences of posture upon uterine gestation may be divided into maternal and fetal. This distinction cannot, however, be always maintained, for the relations of the uterus and fetus at this time are so intimate that what affects one must necessarily react upon the other. After impregnation both begin to increase in weight, and every day become more subject to the influence of gravitation.

(a.) *Uterine Position.*—When a woman advanced in pregnancy stands erect, the axis of the uterus forms with the horizon an angle forwards of 35° , and when she lies upon her back an angle backwards of 54° . When she reclines the uterus is vertical, and when she lies on either side it is horizontal. These uterine positions are capable of being greatly modified by the condition of the abdominal walls. If they be tense, posture will have very slight displacing power; but if, from frequent child-bearing, their resiliency be lost, the uterus will move with every change of posture, sometimes falling so far out of its normal axis as to cause fetal malpositions.

(b.) *Fetal Position.*—In the earlier months of gestation, when the waters are plentiful and the fetus not so firmly grasped by the uterus as at term, the influence of uterine position on fetal attitude must be considerable. At this time there is nothing but the umbilical cord to prevent it falling hither and thither with every change of maternal

posture. It has been found by floating a fetus in salt water of its own specific gravity, that it swims with its head lower than the breech, and its right shoulder looking downwards. Gravitation determines this position, the head and liver being the heaviest parts. Supposing the fetus to be floating freely in the normally situated uterus, it would, when the mother was sitting or standing, assume the position which experience has proved to be normal. These are the postures in which a woman spends the day. During the night she sleeps upon one side or the other, and in either of these positions the fetal attitude would be little affected. Both night and day the postures ordinarily assumed by women have therefore the effect of maintaining by gravitation the natural intra-uterine fetal position.

It is doubtless true that the configuration of the abdominal cavity and the reflex movements of the fetus assist in deciding what attitude it shall take ; but, notwithstanding all that has been written against it, there is doubtless reason to believe that gravitation as a determining cause does exist and act efficiently.

(c.) *Maternal Position.*—As the gravid uterus increases in weight, and presses forwards the abdominal walls, the balance of the trunk upon the ilio-femoral joints is gradually disturbed. To preserve the equipoise of the body it is therefore necessary to change its position. The increased weight anteriorly demands a fresh adjustment. There are two ways of doing this, either by extending the spine and throwing the shoulders backward, or by flexing the spine, debasing the pelvic inclination, and thus shifting forward the points upon which the body oscillates. The first is the better and more natural plan. The second, which is liable to cause disorders of the pelvic organs, is often adopted from feelings of false delicacy, or for the purpose of concealing gestation.

14. *Anomalies of Gestation.*

Owing to the erect position of women they suffer from many disorders which quadrupeds escape. The contents of the abdominal and pelvic cavities gravitating perpendicularly cause innumerable grave and petty derangements, the greater part of which, however, can be relieved or cured by postural treatment.

(a.) *Displacements of Gravid Uterus.*—The gravid uterus, owing to its increased bulk and contents, is much more liable than the unimpregnated to be affected by gravitation. This is more especially true during the earlier months, before the uterus is steadied by the retaining power of the abdominal walls.

(a.) *Prolapsion.*—During gestation the uterus has great tendency to become depressed, both directly and indirectly, when the body is in the erect or dorsal reclining position. In the first instance, by its own increased weight, and in the second by the larger surface which it presents to the influence of the superincumbent intestines. Early in gestation slight prolapsion generally takes place. This, however, is remedied and obliterated during the third or fourth month, when the uterus rises out of the pelvis. At the end of gestation prolapsion again occurs, and the head of the fetus enters the pelvic cavity. From the beginning to the end of gestation many inconveniences and morbid conditions are caused by the downward pressure of the uterus. The bladder and rectum have their functions deranged. Tenesmus, retention of urine, and obstinate constipation are not unfrequent results. The venous system also suffers to a great extent. Obstruction to the return of the blood, produced by presence of the gravid uterus upon the veins, causes many serious symptoms. Edema of the abdomen,

labia, and legs, and varicosity of the veins of the pelvic contents and legs are some of these.

Postural treatment, both prophylactic and curative, is most satisfactory in these cases. During gestation a woman should not, when at rest, sit or stand. It is necessary to take exercise, but the lateral reclining and recumbent postures are those which she should at other times adopt. Care also must be taken that the weight of the gravid uterus be not increased by stays and heavy garments suspended from the waist. When prolapsion has existed before gestation the horizontal position should be carefully maintained until after the fifth month.

(β.) *Retrorsion*.—During the first three or four months of gestation the uterus remains in the pelvis slightly prolapsed and retroverted in the sacral cavity. If, whilst this is the case, a pregnant woman remain too long in the dorsal, reclining, or upright posture, the uterus is liable to be incarcerated, and gradually more and more retroflexed; and this is especially likely to occur if the pelvic inclination be debased.

Many of these cases of retrorsion, with their distressing symptoms and fatal result, would never arise if women would exercise postural care during early gestation. Ordinarily the treatment advised in prolapsion would prove sufficient, but when retrorsion of the uterus has existed in its unimpregnated state, by adopting prone positions, or at times, if necessary, the knee-head-descending posture, even this predisposing cause will, with other suitable means, be found successful.

The replacement of a retrorted gravid uterus is sometimes very difficult. Various plans are adopted, but most of them consist of force applied directly to the uterus, the neck being pulled down and the fundus pushed up. These manœuvres may be greatly assisted by placing the patient in the knee-

head-descending posture, or, if weak, upon the side, with the hips raised and the shoulders depressed. It has also been advised that the patient should rest her head and hands upon the floor, whilst the anterior part of the thighs and legs remain upon the edge of the bed, where they are supported by assistants. In either of these positions the weight of the intestines is removed, and the uterus is allowed to gravitate towards the abdominal cavity. If whilst in the knee-head-descending posture the vaginal orifice be opened, air will enter the vagina. The use of atmospheric pressure in reducing uterine displacements is sometimes very valuable, but it must be remembered that its line of action is always in the direction of least resistance. Could it be determined what portion of the vaginal roof it would act upon, it would be still more valuable in treating displacements of the uterus, whether it be gravid or not. The most, however, it can be expected to do is to cause the uterus, straight or flexed, to move into the abdomen to an extent proportionate with the laxity of the abdominal walls. Any more complex postural influence must be sought in the gravitatory movements of the uterus itself.

The uterus once reduced, recurrence of retrorsion may be prevented by keeping the patient in the prone and lateral recumbent postures until the sixth month of gestation.

(γ .) *Antrorsion*.—As the uterus grows larger it emerges from the pelvic cavity and inclines forward, the amount of inclination being determined to a great extent by the tension of the abdominal walls. In pluriparæ when the recti muscles have become separated this displacement is sometimes much exaggerated, the fundus uteri hanging over almost to the knees, and causing the deformity known as pendulous abdomen. It will be readily understood how antrorsion occurs when it is remembered that the inclination of the pelvis throws the weight of the gravid uterus upon the anterior abdominal wall,

the uterus in its normal position when the woman is erect forming an angle with the horizon of 35° .

The postural treatment in these cases is obvious. Abdominal support when the patient is upright, and dorsal recumbency when at rest.

(δ .) *Dextrorsion and Sinistrorsion.*—The gravid uterus may fall obliquely to the right or the left. Displacement to the right is, however, by far the more frequent. This obliquity has been accounted for by various gravitatory hypotheses. Some writers maintain that it is due to the increased weight of the right side of the uterus, caused by the attachment of the placenta to that side. Others believe it to be due to women lying generally all night on their right side. Neither of these explanations will, however, bear the test of strict analysis. The most probable cause of dextrorsion is the left lateral curve of the lumbar vertebræ, which is found so constantly as to be regarded as normal. This curve has the effect of providing more room for the gravid uterus upon the right side of the abdomen, and in this position, in accordance with the law of least resistance, it locates itself.

Some women complain of a peculiar sharp pain in the right side during the latter months of gestation, which can be increased or relieved by posture. It seems to be due to pressure caused by dextrorsion. Mr. Robertson writes, "Almost always the patient says she is worst in the afternoon, or towards the evening, or in the night; that the pain is aggravated by sitting down; above all, by lying in bed on the right side or on the back. She is obliged to lie on the left side; and I have known some who, in the after part of the day, had no ease unless when leaning the body towards the left. In a majority of instances the child is felt by the patient to lie more on the right than the left side of the abdomen." The obliquity of the fundus towards the right side causes the cervix to swerve to the left, and the conse-

quence is that the pressure already mentioned falls upon the left side of the pelvis. In this way may be explained the comparative frequency of phlegmasia dolens, edema, varicosity, and other disorders on the left side.

Postural treatment consists simply in lying upon the opposite side to the one towards which the uterus inclines. Some exception to this rule must, however, be made when these displacements are caused by ovarian or other tumours gravitating in their vicinity.

(ε.) *Ascension*.—When gestation is nearly completed the pressure of the uterus upon the stomach and diaphragm interferes with their functions, producing vomiting and difficulty in breathing. This pressure is much increased when the patient is recumbent. When she stands or is semi-erect, it is relieved, the uterus in these postures gravitating away from the organs whose functions are disturbed.

(b.) *Vomiting during Gestation*.—This troublesome and occasionally dangerous disorder has undoubted relations to posture. It has the name of morning sickness from the fact that it appears when the patient leaves her bed, and assumes the erect posture. It is evidently reflex in its character, and is probably produced by hypostatic hyperemy and hyperesthesia of the uterus. Certain it is that all obstetricians recommend the recumbent position for its relief, and often with great success. But Dr. Clay, of Manchester, goes further than this, and believing gestational sickness to be dependent upon congestion and tenderness of the cervix uteri, advises "a position of the body calculated to relieve the os and cervix from pressure against the pelvic viscera, best accomplished by lying on the back with the hips raised and head low." It is probable that he found this excellent postural treatment successful not so much from the avoidance of cervical friction as from the disburdening of the uterine circulation which it causes.

Displacements of the uterus have also been suggested as producing vomiting during gestation, and with probability, for by them mechanical hyperemy is often caused, and it would have the same effect as hypostatic hyperemy upon the uterine nerves.

If this be a correct causation of gestational vomiting, it follows that the proper postural treatment must be to preserve the patient from passive pelvic hyperemy.

(c.) *Fainting during Gestation.*—Some women upon the slightest provocation faint during gestation. It is a dangerous complication when the syncope is prolonged, for it may cause death of the fetus. Faintness usually attacks the patient when she is standing or sitting, or when she rises suddenly from the recumbent posture. It is apt to occur at the end of the day during or directly after dinner, and it may in some cases be observed to take place every day for some time, but to cease if the patient reclines during the meal. Nature prescribes and enforces, by removing the voluntary control of the muscles, the postural treatment for fainting. But where this tendency to syncope is known to exist, recumbency should be adopted as a prophylactic measure.

(d.) *Falling during Gestation.*—The increasing prominence of the abdomen so alters the poise of the body and obstructs the view that stumbling and falling are not unfrequent accidents during gestation. They can only be prevented by a more careful use of the voluntary muscles and a closer inspection of the surface to be traversed.

15. *Gravidal Denidation.*

Gravidal denidation, like the fall of fruit, may result from early blight or ripeness. When the fetus dies or is fully developed the gravidal decidua disintegrates and uterine action commences.

(a.) *Determination of Parturition.*—There is every reason to believe that gravidal denidation can be determined by posture, and that the natural loosening of the fetal membranes caused by the disintegration of the nidal decidua may be expedited by exertion, more particularly when taken in the upright position. A hasty walk, or a rough drive, has been frequently known to be followed immediately by parturition. It was found that a large proportion of the working men's wives in Sheffield were delivered on Sunday, and this was attributed either to extra exertion necessitated by Saturday house-cleaning, or by the extra amenities of married life encouraged by the leisure of Sunday. Rocheus tells us that the Arabs used to advise women some days before labour to run up and down stairs and leap; whilst Savonarola says, "*appropinquante partu convenit coitus frequens.*"

16. *Anomalies of Gravidal Denidation.*

Gravidal, like ordinary denidation, may take place unseasonably, and result from various morbid and mechanical conditions,

(a.) *Determination of Untimely Parturition.*—The influence of posture in causing the untimely termination of gestation has been long recognised. The mode in which it effects this is well worthy of consideration, for abortion occurs with startling frequency, and produces a large amount of chronic uterine disease and ill health. The postural causes of early parturition may be divided into maternal and fetal.

(a.) *Maternal Causes.*—To passive hyperemia many of the untimely terminations of gestation must be attributed. They usually occur in women plethoric and sedentary in their habits, who from choice or occupation render themselves liable to hyperemic disorders of the pelvic organs. A predisposition is thus induced. The determining causes are the

extravasation of blood from the decidual vessels produced mechanically by jumping, dancing, riding, or any other violent exercise, and morbid hyperemic conditions of the gravidal decidua.

(3.) *Fetal Causes.*—These causes, though less direct in their action, are equally potent in determining gravidal denidation. Apoplectic effusions in and degeneration of the placenta and membranes caused by postural hyperemy may cause the death of the fetus and consequent denidation. Among the fetal causes must also be placed early rupture of the amnion and evacuation of its contents. When preternaturally thin, slight exertion in the erect posture may cause amnionic laceration.

The postural treatment of untimely gravidal denidation is chiefly prophylactic. Some women very soon after impregnation begin to complain of weight, pain, and dragging in the pelvic region. These patients should be particularly careful to avoid all postural sources of hyperemy. With other women gravidal denidation is caused so readily that gestation can only be prolonged to the normal duration by the persistent adoption of the recumbent position. If the determining hyperemic disorder be due, as it often is, to uterine displacement, postural and other treatment suitable to the nature of the case must be adopted.

17. *Parturition.*

The influences of posture on parturition are exceedingly numerous. There are those which facilitate and those which complicate the function, and there are some which act upon the fetus and others upon the mother. In obstetric practice it is important that the action of all these should be properly understood.

(a.) *Maternal Posture in Parturition.*—Upon this subject there exists an immense mass of literature, reaching from the earliest periods to the present time. It is, however, beyond the intention of so short an essay to enter into it more fully than is necessary to illustrate the various practical points connected with parturient posture. Should any be anxious to know more of the history of this subject he will find materials and references to his heart's content in Dr. G. Ch. Siebold's "*Commentatis de cubilibus sedilibusque usui obstetricis inservientibus*," 1790.

The positions which have been and still are adopted by women in labour are so numerous that it is difficult to give them an exhaustive classification. Perhaps it will be best to follow the plan adopted in the first chapter, and begin with the erect posture.

(a.) *Standing.*—The erect posture during parturition has been much extolled by some obstetricians. It is employed in numerous ways. The patient either stands leaning forward and taking hold of a chair, bed-post, mantelpiece, or some other convenient support; or she puts her arms round the neck of a woman, "if possible, taller than herself, who gently supports the small of the patient's back with her hands, and with her knees fixes the knees of the woman in labour" (Spence), "the operator coming behind" (Pugh). Some advise the patient to lean and press her back firmly against a wall or piece of furniture. In this and all the previous positions the legs are to be separated. Of British obstetricians Burns was the great upholder of the standing posture in parturition. He contends that, "It calls in the aid of gravity, adding the pressure of the child to the action of the uterus. The water is allowed to run freely out, and the continued application of the presentation to the dilating os uteri excites action. The child must be more easily pro-

pelled, surely, if it be in such a situation as to allow it to fall out by its own weight, were it not prevented by the soft parts, than if it rested on a horizontal surface, and required to be moved along that, by muscular effort, as is the case in a recumbent posture. The difference of facility then becomes truly a stimulus. Besides, the muscular motion or walking which is employed in an erect position does good, either by exciting the womb directly or by removing sympathetic pains in the muscles." Notwithstanding the arguments thus ingeniously urged the general opinion of obstetricians is against the standing posture during labour. The great objections to it are that it involves unnecessary fatigue, and is a source of danger both to mother and child. The accidents which may result from it are flooding, laceration of the perineum, evulsion of the placenta, rupture of the funis, inversion of the uterus, and precipitation of the fetus.

During the first stage of parturition the standing posture is sometimes admissible, and may be recommended for short periods with success. The advantage gained, however, must be attributed more to the increased uterine action produced by the succussion of walking than to position. The axis of the uterus being in a line with that of the pelvic inlet, it is obvious that the largest gravitatory influence of the fetus cannot be obtained when the patient is erect.

(β.) *Sitting*.—Women in labour have from the earliest periods used this posture, and to enable them to do so conveniently chairs of the most primitive simplicity and of the most ingenious complexity have been invented. The three-legged stool mentioned by Harvey and the *geburtsstuhle* of Stein are extreme representatives of these pieces of furniture, the interval being filled up by chairs gradually increasing in parts and movements as time progressed. Amongst the members of the medical profession all over Europe the belief

in the efficacy of these chairs was unbounded. This country, however, never enthusiastically adopted them, for our earliest obstetric writers either condemn them or only mention them as being in use. Our midwives, it must be admitted, fully made up for this negligence and want of faith by the exaggerated belief they placed in the oxytotic powers of obstetric chairs. If they could only get their patients into these chairs, no matter in what stage the labour might be, they expected parturition would be rapidly terminated. Harvey, knowing the prevalence of this opinion, writes, "The younger, more giddy, and officious midwives are to be rebuked, which when they hear the woman in travail cry out for pain and call for help (lest they should seem unskilful at their trade and less busie than comes to their share) expose the poor women to the injuries of the air, and vainly persuading them to their three-legged stool, weary them out, and bring them in danger of their lives." This is no exaggeration, for Percival Willughby, who speaks of Harvey as "my honoured good friend," writes about the same time in a like strain. He speaks of "ignorant robustious midwives" putting their patients on stools before the womb has opened or any waters gathered, "with their hinder parts naked and starved with cold." He adds, "I leave all women to their liberty to make choice of their midwife, yet I will not bee forward to perswade them to take such a midwife as will bind them perforce fast in their chaires against their wills." Willughby thus states his opinion of obstetric chairs:—"The labouring woman sitting with her body naked on the midwife's stoole usually taketh cold, which starveth and straitenith the body, and oft bringeth much griefe and affliction both to the mother and the child with a long continued labour. I rather commend an easy low pallet, or a warm bed. A midwife's stoole is good for little, or rather for nothing, yet severall women do highly commend them."

Instead of a chair the knees of the husband or of a strong woman were used. This method of employing the sitting posture was once very popular. It is thus described by Pugh, who believed it to be very advantageous in tedious labours :—" Place a good strong woman in a common arm'd chair with a pillow in her lap ; she then takes the woman in labour upon it, and putting her arms round her clasps her hands on the top of her belly just under the region of the stomach, and there holds her tight. The woman in labour grasps each extreme end of the arms of the chair, which she pulls at violently in every pain by way of counter-extension, and two of the assistant women take two low chairs and seat themselves one on each side of the armed chair, and take each of them one of the patient's legs, and fix them fast on their outermost thigh just above the knee, and there hold it tight, placing their other hands on the inside of the patient's knees, and keep them tightly extended ; then the operator, seated upon a low chair, comes between those two assistant women, close up to the patient (her cloaths being decently pulled over her knees) with a coarse tablecloth on his lap. In this posture the patient can force down her pains with much more violence than in any other, so that where the passage is narrow or the child's head large, the poor patient must go through a great many strong pains as the head advances but very slowly. In all such cases you will find this the most advantageous posture. You must take care that your patient's lower parts come far enough over the woman's knees she sits on, for fear of pressing the *os accygis*."

A third way of using the sitting posture is sometimes adopted. Two chairs are fastened together, leaving a space between the seats upon which the patient is seated. This method is well described by Heister :—" Two common chairs of the same height may be placed together about six or

eight inches distance from each other, and tied fast in that position, that the patient may sit with a thigh upon each chair, and her genitals hanging over the intermediate space betwixt them, by which means the *os sacrum* and coccyx have their free liberty to recede at the time of excluding the fetus."

The sitting, like the standing, posture may sometimes be useful in the early stage of parturition. When it is used during the second stage the patient's spine should be flexed, so as to debase the pelvic inclination (see fig. 3), and give greater gravitatory influence to the fetus.

(γ.) *Kneeling*.—The kneeling postures usually employed in midwifery are two, the knee-head-ascending and the knee-head-descending.

(1.) *Knee-head-ascending*.—This position is believed by many obstetricians to be by far the best in which a woman can be placed during the last stage of parturition. It is here called knee-head-ascending, because it includes all the postures which a woman assumes when she kneels with her body more or less erect. Willughby calls it the "slope bending posture ascending;" others the "knee-hand" position. This latter term is not sufficiently definite, for the hands may be placed either high or low whilst a person kneels upon the floor, chair, or bed, giving the body various inclinations between the horizontal and perpendicular, or even the knee-head-descending posture.

The knee-head-ascending position is said to be that which women in labour naturally adopt. History certainly proves it to have been widely used in all ages and places. In this posture Homer places Latona during parturition.

"When, with her fair hand, she a palm did seize,
And staying her by it, stuck her tender knees
Amidst the soft mead, that did smile beneath
Her sacred labour, and the child did breathe
The air in th' instant."—*Chapman's Translation*

Patients delivered in this posture usually kneel on a pillow, with the knees apart and the arms upon a chair, bed, or lap of a friend. Old writers speak of the woman kneeling on a bed with her arms clasped round the neck of a friend who sits in front of her. Also of the patient whilst kneeling being supported under her arms by an attendant on each side. The rules for the use of this posture in the seventeenth century are thus given by Willughby :—"And for that all women bee delivered usually either lying on a pallet bed or kneeling upon a bolster ; if the woman bee weak, a pallet bed may bee thought the most convenient place. But if shee bee strong and of an able body, and the child lively, I then know no cause contradicting why shee may not bee as well, or rather better, laid kneeling on a bolster than lying on a pallet bed, when that her body is fitted for the birth, with this caution, so that shee will not bee overuled by the midwife to make too much hast to come unto her knees for her delivery."

The kneeling is far better than the standing posture. It produces less fatigue, and the flexion of the spine which accompanies it renders the progress of the fetus easy. In it also there is no fear of the child being precipitated from a height with injury to itself and its mother. The space between the uterus and the surface upon which the patient kneels is so small that the head of the fetus is arrested before the whole of its body is expelled, and the average length of the funis is sufficient to prevent its dragging down the placenta or uterus.

During the last stage of labour the knee-head-ascending posture is strictly scientific, for when the woman is thus placed the outlet of the pelvis rests perpendicularly, and the greatest gravitatory influence of the fetal head is secured. In tedious labours it is a posture which may be confidently

recommended. It is often welcomed by patients as a comfortable change, and by obstetricians as an able assistant.

(2.) *Knee-head-descending*.—This position is most commonly called the “knee-elbow,” or “genu-cubital,” but as the knees may be placed low and the elbows high, the term does not necessarily indicate the sloping position of the body here called knee-head-descending. Old writers call this posture “grovelling,” “prostration,” “pitch-polling,” and the “slope bending posture descending.” Lately it has been named the “knee-breast” posture. This, however, is not a happy verbal combination, for like “knee-elbow” it does not positively indicate the intended inclination of the body. But there is a still greater objection to its use, and that is the impossibility of adopting it. Any one who will take the trouble to kneel on the floor and maintain his femora erect will at once find that he cannot touch with his breast the horizontal plane upon which he rests.

The knee-head-descending posture was strongly recommended by early medical writers when the parturient woman was largely encumbered with fat. It is difficult, however, to understand upon what grounds this advice was given, for in this posture the uterus is turned upside down, and the effect of gravitation upon the fetus therefore becomes retentive.

An extraordinary kneeling posture is described and figured by Scipio Mercurialis and Seb. Melli. The woman in labour after kneeling is made to throw herself back until the hips touch the heels, and the body is supine—a most painful posture to maintain, and possessing no advantages to warrant its barbarity.

(8.) *Dorsal Reclination*.—This is a posture which has been and still is, in some countries, very commonly adopted. Thus placed the patient is relieved from the fatigue caused by the standing, sitting, and kneeling positions. The following cut

represents an early method of employing dorsal reclination during parturition. It is after a sculpture found at Golgas, in Cyprus, in a temple erected in honour of Bael and Ashtareth, the divinities of generative and reproductive power. The date of the original is supposed to be 300 B.C.

In the first stage of parturition dorsal reclination is good, for in this posture the uterus rests perpendicularly to the

FIG. 4.



plane of the pelvic inlet, and consequently the full weight of the fetus gravitates in the right direction.

Early British obstetric writers advise dorsal reclination for the second stage. "The best way," says Hugh Chamberlen, Sen., is for a woman to be delivered in this position on a pallet bed. It is also recommended by William Sermon, and thus described by him :—"Women in labour ought to be laid flat upon their backs, having their heads raised somewhat high with pillows placed under their backs that they may not bow ; and also under their buttocks and share-bone let them

have another pillow, somewhat large, that the parts aforesaid may be in some measure lifted up; for if they sink down they cannot be so well delivered. Let their thighs and knees be stretcht forth and laid open, and their legs bowed and drawn upward, their heels and feet pressing hard against the piece of wood laid across the bed for the same purpose. Some cause a swathe to be put under the back four double, which must come round about them; which swathe ought to be a foot broad or more, and so long that it may be held by two women, being placed on each side the bed therewith to lift up the woman in labour, pulling it easily towards them, and especially when their throws come upon them; by which means they are much refreshed and their throws endured with more ease. Besides the two women that hold the swathe, there must be two more to take them by the hands thereby to crush them when their throws come; and the other hand they must lay upon the top of their shoulders that they may not rise too much upward, and that they may the better strain themselves; for commonly as they thrust their feet against the piece of wood laid cross the bed they raise themselves upward. Sometimes the midwife may gently press the upper parts of the belly, and by degrees stroke the child downward, the which pressing down with discretion will hasten and facilitate delivery."

Dorsal reclamation is not the best posture for a woman to assume during the second stage of parturition, for in this position the head of the fetus has to ascend through the pelvic outlet in opposition to gravitation, and with the additional disadvantage of causing the greatest amount of pressure upon the perineum. The coccyx is also liable to be pressed upwards by the mattress or pillow upon which the pelvis rests, and there is a tendency for the woman to slip down towards the foot of the bed, causing tension of the skin

of the sacral region and perineum with greater liability to laceration. It has been observed that only 39 per cent. of women delivered in this posture escape laceration, whilst in other positions 57 per cent. receive no injury.

(ε.) *Supine Recumbency*.—This posture has never been widely recommended, and is not likely at any time to become popular. In it the gravitatory difficulties mentioned as occurring in dorsal reclination are intensified, whilst, on the other hand, the coccygeal and perineal objections are to some extent removed.

In cases of antrorsion of the gravid uterus during parturition this posture would be of service, and should be adopted.

(ζ.) *Prone Recumbency*.—This position is not used in normal parturition. Some old writers recommend it in difficult labours, and more especially when patients are very fat.

(η.) *Right Lateral Recumbency*.—The lateral recumbent posture has for many years been adopted in this country by women in labour. It is, in fact, known all over the world as the British parturient position. When it was first employed by us is wrapt in obscurity. Fielding Ould was the earliest obstetric writer to draw our attention to the superiority of the right lateral recumbent posture over all others, but it is quite evident from his remarks upon this subject that the lateral recumbent position was in use before 1748, the date of his work on midwifery. He says, "Both in England and Ireland various are the postures that women are delivered in—namely, on their back, *side*, knees, standing, and sitting on a perforated stool; the side is certainly the most advantageous posture for natural labours; for the patient is less subject to cold, the os coccygis is not hereby pressed inward so as to hinder the exit of the child; and as the operator and standers-by are by this means behind her back she is less subject to be disturbed by their remarks and

whispers. As the side is the posture for natural deliveries, we will suppose the patient in that situation, with her face inclined towards the breast and her thighs as close as may be to the belly ; the buttocks near the edge of the bed, and the back in an oblique direction from that to the middle of the bolster ; always observing to have a pillow or something of that kind between her knees. If the patient lies on the right side you must examine with the right hand, therefore this is the most convenient ; but sometimes the situation of the bed, or the patient's inclinations are such that she will lie on the left ; therefore you must be equally expert in using the left hand."

Ould says dorsal reclination is well enough for easy labours, but that when any difficulty arises it is the worst that can be contrived, for the pudendum is on a line with the bed, and below this plane the elbow cannot be lowered so as to allow the hand to pass upwards into the uterus. He prefers the kneeling posture in preternatural deliveries.

(θ.) *Left Lateral Recumbency*.—In 1751, three years after Fielding Ould published his work, John Burton of York gave to the world his learned essay on midwifery. In it he maintained the superiority of the lateral recumbent posture. He uses the same arguments as Ould, but does not recommend one side more than another. He says, "The patient may lie on one side or the other, with her face and breast inclined forwards." Continental writers erroneously attribute to Burton the credit of having suggested and established in this country the left lateral recumbent posture. It is difficult to say to whom this merit belongs, for Smellie, whose book on midwifery appeared at the same time as Burton's, speaks of the lateral recumbent posture as the established and customary position for women in labour. He writes, "The London method is very convenient in natural and easy

labours ; the patient lies in bed upon one side, the knees being contracted to the belly, and a pillow put between them to keep them asunder." A little after he says, " She is commonly laid on the left side, but in this particular she is to consult her own ease."

It will be observed that up to this time obstetricians had no strong conviction as to whether the left or right side was the better, although Ould preferred the right and Smellie the left. Three years later, 1754, the sagacious Benjamin Pugh, of Chelmsford, published "A Treatise of Midwifery," and in this is to be found for the first time the enunciation of the belief that the left lateral recumbent was the best parturient posture. He does not, like previous writers, say either side will do ; he will have none other than the left lateral, either in normal parturition or when obstetric operations are required. His own words are : " The common posture I make use of (and, indeed, very seldom any other, either in instrumental or in turning) is the left side, which is certainly the most advantageous, as it is likewise the most decent, the patient being much less exposed to the cold, and the operator can come at his business much easier and readier than in any other posture ; and when I am spoke to by the patient to lay her (and don't come after a midwife) I always put my patient in this posture, and have very seldom any occasion for another. In this position the right hand is used, but if in turning the child you lay the patient across the bed, the hind parts brought near to you, then either hand can be made use of, and with more advantage than in any other posture, especially the left hand (which I advise every operator to make use of in turning), as the right hand can be thrust between the thighs and placed externally upon the belly, from which every operator will find great service in pressing properly with this hand externally, both in

turning and likewise extracting the placenta when it adheres. If the operator should be very awkward with his left hand, then he must turn with his right, remembering to place the patient on her right side. In natural labours the head and shoulders of your patient should be raised higher than her hind parts, and in preternatural labours her hind parts higher than the head and shoulders (the reason must be obvious to every one), the knees drawn up close to the belly, and kept asunder with a pillow rolled up tight."

It will be observed therefore that the adoption of the left lateral posture was a work of time, and was not popularised in this country until the middle of the last century. At the beginning of the present century the prejudice in favour of this posture had become so strong that ignorant practitioners in midwifery believed no woman could be safely delivered in any other. Ryan says, "I have repeatedly known this position to be kept for two, three, or even four days and nights, regardless of the violation of physiology, and of the urgent entreaties of the unfortunate sufferer to be allowed during a pain or two to turn on the right side or back." This infatuation has happily passed away, and, with the equally blind faith in the efficacy of the obstetric chair, has given place to a more rational treatment of parturient women.

In determining the relative advantages of the various postures adopted by women during parturition, it is necessary to examine what are the principal postural requirements in a case of natural labour. These must be considered and estimated under three heads—the labour force, the patient, and the obstetrician.

The forces exerted in parturition are muscular and gravitatory—the former being provided by the contractions of the uterus and muscles surrounding the abdominal cavity; the latter by the weight of the fetus and amniotic fluid. To

obtain the greatest labour force both these powers must be simultaneously exerted. The position of the patient must be such as will enable her to fix and efficiently employ all the voluntary muscles subservient to parturition, and at the same time allow the uterine contents to gravitate in the particular direction which the stage of labour may demand.

Theoretically, the best posture for a woman in the first stage is dorsal reclamation, with fixed points, which the feet may press and the hands grasp. In ordinary parturition, however, the prolonged maintenance of such a position would be intolerably irksome and fatiguing, and the benefit of it would be more than counterbalanced by its evils. During the first stage a woman should be allowed to move and pose herself as she pleases. When the second stage has arrived, position becomes of more importance, and the patient must be directed how to place herself for her final exertion. Here again the theoretically correct posture is not the one most to be recommended. Passing through a painful ordeal of many hours' duration, the patient demands the greatest consideration. Anything which fatigues her, or limits her liberty of action, will depress the mind and retard labour. In choosing the best parturient posture, it is necessary to provide one which shall be agreeable to the patient and accelerative of parturition. The kneeling position does not meet these requirements. It is fatiguing and repugnant to her, and inconvenient to the obstetrician. The left lateral recumbent posture, or more strictly speaking the *left lateral reclining* position, affords the greatest number of advantages to the patient during the completion of the second stage. The exertion demanded by the standing, sitting, and kneeling postures is avoided, and no gravitatory obstacle is presented to the passage of the fetus. If the patient's shoulders be raised and her body slightly pronated, a large amount of

the weight of the child acts in the right direction. There is a slight loss, but this is fully compensated by the increased vigour of the voluntary muscles, whose power has been conserved by the comfort and repose which recumbency has granted. In order to fix the voluntary muscles the patient should be provided with something against which she may press her feet, and her hands should have some firm object to grasp—a towel tied to the bed-post or a hand.

The obstetrician has no reason to find fault with the left lateral recumbent posture; the parts with which he is concerned are readily accessible, and neither the bed nor any parts of the patient impede his manipulations. He may sit in a chair in an easy position, and perform his duties without rising or stooping, or subjecting himself to any corporeal inconvenience. He has no plea for impatience on the score of discomfort; and this is not an unimportant additional advantage of the lateral recumbent posture.

18. *Anomalies of Parturition.*

Parturition is capable of being complicated by posture to a large extent. Disturbances in the relative positions of the child and mother may arise from it, retarding the parturient function of the uterus. Anomalies of the bony and soft parts of the mother may also be produced by position, causing obstruction and serious danger both to mother and child.

(a.) *Untimely Parturition.*—The early expulsion of the fetus from the uterus is parturition in miniature. It is not, however, on this account to be looked upon as of comparatively small importance, for the results of untimely labour are far more injurious and lasting than those which accompany and follow normal parturition. The postural relations

of untimely parturition are the same as those which apply to natural labour, but according to the development of the fetus to a greater or less degree. They also coincide, as far as the postural treatment of the after discharges and of uterine involution is concerned. These relations are elsewhere fully described.

Posture may be employed to check or accelerate fetal expulsion—acceleration can be accomplished as in normal, retardation as in precipitate parturition. By immediately adopting recumbency upon the appearance of the first symptoms of untimely parturition its progress may occasionally be completely checked. This posture relieves hyperemy, and removes the weight of the fetus from the cervix to the less sensitive sides of the uterus. If expulsion be inevitable, and there exist no counter-indication in the form of hemorrhage, the influence of gravitation may, if needed, be recommended. If blood flow freely, as it is apt to do in these cases, the hips must be raised and the shoulders depressed as in the ordinary postural treatment of parturient and puerperal hemorrhage.

(b.) *Powerless Parturition.*—Women who lead sedentary and debilitating lives are liable to have weak expulsive uterine power and tedious labours. In these cases any additional assistance which posture can afford is eagerly sought. During the first stage of parturition uterine contraction may be greatly intensified by the patient walking occasionally about the room. Whilst taking this exercise, succussion of the fetus against the internal surface of the uterus takes place, which sets up reflex action in its muscular structure. In this position also the gravitatory influence of the fetus is not lost. Periods of rest in the recumbent posture should be recommended lest the patient become exhausted, and likewise to prevent the constant pressure of the gravid uterus upon the bladder, which produces retention of urine and feeble uterine

contractions. In the second stage the greatest postural assistance is to be gained by placing the patient in the knee-head-ascending position. This is best done by the woman kneeling upon a pillow placed on the floor beside a bed upon which her arms and head may rest. In some country places the plan of seating a patient between two chairs already described is much extolled and adopted, and may be fairly tried at intervals if the woman be able to bear the posture.

(c.) *Precipitate Parturition.*—In some women the pelvis is so roomy, the soft parts so yielding, and the expulsive pains so violent, that in the course of a few minutes the whole parturient process is completed. At first sight this might appear a happy mode of passing through labour, but unfortunately it is quite the reverse, for both mother and child are apt to be injured by too rapid parturition. If whilst the mother is standing or walking the fetus be suddenly expelled, it may be precipitated upon the floor and suffer serious injury. In this case the placenta also may be torn from its site, the funis ruptured, the uterus inverted, and fatal hemorrhage induced. This form of labour is peculiar to some individuals and families. When the tendency is known to exist, the patient should at the first approach of parturient symptoms lie down and remain as quiet as possible, with the hips raised above the level of the shoulders. In this manner the auxiliary influence of gravitation is avoided, and reflex muscular action moderated.

(d.) *Obstructed Parturition.*—In the early ages all cases of parturition which did not progress favourably were classed under one head "difficult labour," and they were all treated in the same way without any reference to the character or number of their causes. It is most pitiful to think of the agony which must have resulted from the cruel ignorance of those dark days, and to consider what numbers of fetal and

maternal lives were sacrificed to sheer incompetence and barbarous treatment. Women of the present day cannot be too thankful that they live in a period when obstetric science has reached such perfection; and those of this country, and in fact of every country, should ever remember with gratitude the names of William Harvey and Peter Chamberlen. Harvey who, as a physician, held the highest social and scientific rank, and seeing the degraded condition of midwifery, did not think it (as was the fashion of his day) beneath his careful study and constant practice, and who wrote the first original English work on obstetrics. Chamberlen, who invented the most beneficent of all medical instruments—the midwifery forceps—the earlier knowledge of which would have saved millions from the torturing postural manœuvres which will now be briefly described.

The earliest notion of the proper treatment in obstructed labour was either to shake the child into its proper position or to make it fall out of the womb by violent jolting. In the Hippocratic writings the modes of effecting these ends are thus described.

Fetal Reposition.—"When it is requisite to force back or turn the child, the woman must be laid on her back with something soft under her hips, and stones under the feet of the bed, the foot of which must be raised much higher than the head. There must be no pillow under the woman's head, and her hips must be higher than her head. Such are the preparations. When the child has been forced back and turned to one side or the other, the bed and the woman are to be replaced in their ordinary position by removing the substance from under the hips, and the stones from under the bed. Then a pillow is to be put under her head." Another plan is by succussion, which was thus practised:—"Stretch a cloth under the woman laid on her back, with a cloth over

her to hide the vulva. Each leg and arm being wrapped in a cloth, two women are to take the legs and two the arms, when with a firm hold they will give at least six shakes. Then they will place the woman on the bed with her head down and legs raised, and leaving the arms they will all four seize the legs and give several shocks to the shoulders by throwing the patient back on the bed, so that by the shocks the fetus may be replaced in a more roomy part, and can then advance regularly." Concussion for fetal reposition is advised by Albucasis—the following is his plan of replacing the hands of the child if they come first, and cannot be put back: "Pone mulierem super sedem, et eleva pedes ejus sursum, deinde concute sedem super terram et mulier teneatur, ut non cadat ad concussionem." Roderic à Castro advises the following method of fetal reposition: "Tunc mulieris pedibus compræhensis, ipsam vehementer concutere opus est, donec fetus aliam repræsentare figuram comperiamus."

Fetal Extrusion.—The Hippocratic method of shaking the child out of the womb, was thus practised:—"Take a high and strong bed, furnished; lay the woman on her back, and fasten her to the bed by means of a scarf or wide supple band placed round her chest, armpits, and arms; bend her legs, and fasten them to the heels; place a faggot of small twigs, or something similar, which, when the bed is projected downwards, will prevent the legs at its head end from touching the ground. The woman should hold to the bed with her hands. Raise the bed with its head highest, in order that there may be impulsion towards the foot, taking care the woman does not fall. When this is done, and the bed is lifted, place the bundle of twigs under the feet at its head, managing so that when the bed is projected downwards these feet do not touch the ground, but rest on the bundle. Each leg is to be taken by a man, so that the bed may fall

perpendicularly with regular and equal momentum, and without breaking anything. The succussion should be practised at intervals, and more particularly at the time of the pains." Another atrocious method of employing succussion was to tie the woman to a ladder, which was then suspended by a rope over a pulley; the ladder was raised by pulling the rope, and then allowed to fall suddenly with its end upon the ground by letting the rope go. Thus these miserable victims must often have had the life shaken out of them.

It is much to be regretted that these barbarous methods of treatment were not confined to the earlier ages. Unfortunately it is only too true that, up to within comparatively recent times, pitiable sufferers worn out by ineffective pains had the sufferings and perils of their labours increased and intensified by having to pass through ordeals most trying to healthy persons, and to perform actions requiring great energy and muscular strength. They were made to walk rapidly, to run up and down stairs, to jump, dance, and even to hop. "*Ambulare saltando modo super uno pede modo super alio*" (Savonarola). They were jolted in conveyances, and jumped up and down by persons holding them under the armpits; they were placed in a cloth held at its corners by four men, and tossed upwards and hither and thither. This was done either to cause protrusion or reposition of the child. Our countryman Willughby, writing in the seventeenth century, denounces these practices. He says, in his advice to midwives, "Surely in these men's and midwives' thoughts and opinions there is observed some *occulta qualitas* (which as yet no practitioner hath revealed) in the tossing, rolling, or rocking of the labouring woman on the bed; and untill it shall be revealed, I shall interpret it to bee no other thing than *sola ignorantia obstetricis*." He also, in his "Observations,"

gives the following case, which affords us a vivid picture of midwifery practice in England two centuries ago :—

“ Not far from Ashburn there was a poor creature that was willing to suffer any affliction to be delivered. After much pulling and stretching her body, her conceited midwife's last refuge was not to roll her on the bed, but to toss her in a blanket, as some have served dogs, hoping that this violent motion would force the child out of her body ; but her conceits failing, I was sent for, and ye midwife and women told me that they had tossed her in a blanket, but that it did no good. But I believed that all their strengths and forces were not able to do it, but rather that they moved her body violently by shaking and rolling her in the blanket. And I durst not find fault with anything that this waspish company had done in thus using this poor distressed woman.”

Even a century later these barbarous methods of treatment were not extinct in this country, for George Counsell, writing in 1758, gives the following directions :—“ To disengage the head from the share bone, you must direct the woman to be laid on her back with her head and breast low, and her hips elevated very high on soft doubled beds or bolsters, or the like conveniency. A large bedstead turning up with hinges might be useful on this occasion. She may be placed even with her head downwards and hips upright, and while she remains in this posture her body may be gently shifted from side to side by a strong woman.”

All these rude methods of treating obstructed labour practised from the earliest periods to nearly the present time, show the continued prevalence of a belief in the efficacy of postural treatment. It will be seen by what here follows that the instinctive feeling was correct, and that there were good grounds for the belief, but that through ignorance the

ideas of causation were confused, and the remedial practice unscientific.

(a.) *From Anomalies of the Soft Parts.*—There are many instances in which it would be highly injudicious for a patient to remain in the upright posture during labour, for in this position gravitation causes obstacles which would not otherwise present themselves. When erect, all movable pelvic tumours fall, and if they prolapse before the fetal head, its progress will be retarded or altogether checked. Pelvic tumours and vesical calculi, if known to exist, should, if possible, at the approach of parturition be raised above the pelvic brim, and maintained there by posture and other suitable means until the head of the fetus is engaged in the pelvic cavity.

The hips should be elevated above the level of the shoulders, and the patient should lie in the semi-prone posture. This advice also applies to cases of cystocele, rectocele, and edema and hematoma of the vagina and vulva.

A cause of obstructed labour little recognised, but of frequent occurrence, is a dense condition of the perineum, which, as is the habit of skin exposed to friction, becomes tough and rigid from being constantly in contact with and in motion upon a sitting surface. It is met with in those whose occupations necessitate their spending the greater part of their lives seated at an employment which keeps the body perpetually in action. The pressure and friction of the seat against the perineum renders it dense and unyielding, and this result is rather augmented by soft seats, for they increase the area of the bearing surface, which naturally should be only upon the skin immediately beneath the tuberosities of the ischia.

(β.) *From Anomalies of the Pelvis.*—The varieties of pelvic deformities produced by posture which obstruct parturition

are so great that it will only be possible here to consider them in a general way. They are, however, worthy of careful attention, for it is calculated that one-sixth of the cases of obstructed labour have their origin in pelvic distortions. And when it is remembered that the greater proportion of these is due to posture maintained before the full development, or during a diseased condition of the pelvic bones, it must be evident that the subject, wide as it is, forms an important part of the question under consideration.

(1.) *Distortion during Development.*—The pelvis may be looked upon early in life as a firm but elastic ring composed of bone, cartilage and ligaments. This ring, when the body is erect or sitting, has its circumference acted upon in various ways. In both positions it is pressed upon from above by the weight of the head, arms, and trunk, which is communicated through the spine to the sacrum. When upright the ring is pressed upon from below by the heads of the femora in the cotyloid cavities, and when sitting by the surface sat upon, acting upon the tuberosities of the ischia. There are, therefore, five principal points of pressure—four from below and one from above; and from the points below four arches spring—the ischio-sacral arch and the ischio-pubic counter arch, the cotylo-sacral arch and the cotylo-pubic counter arch. The influence of standing or sitting upon these arches is to spread them out and flatten their arcs. Bearing these elementary postulates in mind, the rationale of the causation of flat pelvis may be readily understood.

If young girls be made to stand or sit for long periods during the soft and undeveloped condition of their pelvic bones, the flattening pressure is effectively brought into play. In standing the sacrum is forced down into the pelvic inlet, and flatness results from spreading of the cotylo-sacral arch and consequent tension upon the cotylo-pubic counter arch.

In sitting the same takes place, except that the strain is now borne by the ischio-sacral and ischio-pubic arches. In either case the result is to elongate the transverse diameter of the inlet, and to narrow it antero-posteriorly. The outlet of the pelvis does not suffer in such a way as to cause obstruction during parturition.

FIG. 5.



Flat pelvis.

This form of pelvic distortion is by far the most common, and is without doubt often due to the ignorant or imprudent conduct of those who have the charge of girls. Young children should not be made to stand and sit in a constrained position for many hours during the day. Nature has made them vivacious and restless, and constant change of position is necessary for their health and normal development. The floor is the best place for them. On a soft carpet with a few cushions they will thoroughly enjoy themselves, and in a short time pose themselves in hundreds of attitudes. When tired of running or standing they will sit, and when tired of sitting they will recline or lie down. The prolonged maintenance of one posture is injurious to adults, but it is far more disastrous in its consequences upon children.

Special pelvic deformities are caused by certain employments, amusements, and habits. Besides the flat pelvis in which the obstructing deformity is produced at the inlet, there is a distortion of the pelvis caused by posture in which

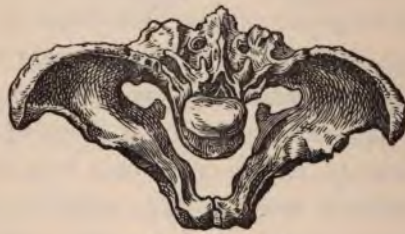
the outlet is affected. In this case the apex of the sacrum is directed forward, and the tuberosities of the ischia are approximated, the pelvic cavity becoming funnel-shaped. Sitting, under these circumstances, must have the effect of increasing the deformity. It is caused sometimes by young girls sitting upon seats badly constructed—that is, with rigid rims and yielding centres. Thus made the seat forms a cup-shaped cavity, against the sides of which the yielding bones of the pelvis are pressed laterally. This deformity is also caused and increased by the action of the great glutei muscles when girls are made to walk or stand too long.

Obliquity of the pelvis may be produced by bad positional habits, such as standing upon one leg, sitting upon the side of a chair upon only one of the tuberosities of the ischia, crossing the legs, leaning to one side during writing, embroidery, and other amusements or employments. The most common of the causes of obliquity is standing on one leg. Girls who are made to remain erect for a long time become fatigued, and “stand at ease”—that is, with the whole weight of the body thrown upon one leg. The right is usually selected. In this way one side of the pelvis becomes raised above the other, and one iliac bone may be observed when the oblique distortion is produced situated higher than the other. This deformity may also result from abnormal conditions of the spine or legs, and in these cases the pelvis is affected by posture secondarily. One leg too short, or lateral obliquity of the lumbar vertebra, will cause pelvic obliquity.

(2.) *Distortion during Rickets.*—When the bones of children become softened by disease, all the foregoing remarks apply with very much greater force. A child afflicted with rickets requires unceasing care and attention. If a female, her existence and that of her offspring will depend in

after life upon the success of the treatment adopted to prevent pelvic deformity. Distortions following a softened condition of the bones are very various. The most common form is an exaggerated flattening of the pelvis. Many modifications of this deformity occur which depend upon the postures the little patients have been most persistently allowed or made to assume. If they be permitted to walk or stand, besides a greater flattening than is observed in the non-rickety pelvis, a more serious distortion takes place. The sides of the pelvis yielding to the continued pressure of the heads of the femora fall inwards until the inlet is nearly occluded.

FIG. 6.



Rickety pelvis.

A child suffering from rickets should on no account ever be allowed to sit for any length of time. This posture produces divergence of the ischial tuberosities, and thus enables the surface sat upon to press up the apex of the sacrum, bending and sometimes causing ankylosis of the coccyx at right angles to the axis of the outlet.

The recumbent and reclining postures are the best for rickety girls, but no special position should be prescribed or tolerated. If the supine posture be exclusively maintained, the yielding pelvis will become flattened transversely, and if the bones be very soft the sacrum will be pressed upwards whilst the symphysis pubis will sink, and the inlet be made to

assume the shape of a figure ∞ . If the little patient be kept lying on one side, the trochanter of that side will press upwards the cotyloid cavity at the cartilaginous junction of the bones, and force the side of the pelvis inwards, the pelvic arch on the other side becoming flattened.

All the remarks which have here been made upon the influence of posture in producing pelvic deformities apply with equal, if not greater, force to softening of the adult pelvis by osteomalacia. The disorder usually affects women who have had children. At this age the weight of the body borne by the pelvis when the patient is sitting or standing is a very great and distorting power, and promptly doubles up the pelvic bones so as to cause serious obstruction to parturition.

(3.) *Obstructive Influence of Pelvic Deformities.*—Distortions of the pelvis influence the progress of parturition very variously; they may produce either a slight impediment or an insuperable barrier. They may also, without presenting mechanical obstacles connected with the mother, impede labour by causing malposition of the child, which is said to take place in parturition four times more frequently than when the pelvis is normal in shape. This is easily explained; for when the fetal head and uterine cervix are able to enter the pelvic brim early in parturition, the uterus and its contents are steadied and held in their natural position. When, however, the brim is contracted, the oblong mass unfixed at its lower extremity sways to and fro with every gravitatory impulsion, and transverse and oblique fetal positions are readily produced.

Narrowed pelves also obstruct labour in the following way. The fetal head impinging upon the obstructing point causes rupture of the membranes and premature escape of the liquor amnii. So frequently does this occur that obstetricians apprehend and look for pelvic distortion when it takes

place. The retarding influence of early evacuation of the waters is well known. Some have endeavoured to prevent their complete escape by placing the patient on her back with the hips raised.

Prolapse of the funis is also an accident sometimes due to narrowing of the pelvis. The waters breaking before the head has entered the pelvis, room is left for the cord to fall between the two, and this is more likely to happen if the patient be at the time sitting, standing, or kneeling. The recumbent posture should be strictly observed where this accident is anticipated. The position, however, need not be maintained after the fetal head has been moulded and forced into the pelvic cavity.

(γ.) *From Anomalies of Pelvic Inclination.*—The inclination of the pelvis should vary according to the stage of parturition. In the first stage it should be normal. In the second it should be less than normal. Too great inclination is caused by pelvic distortions and antroversion of the gravid uterus. It prevents the fetal head entering the brim, and causes it to rest upon the symphysis pubis. Too little inclination during the second stage obstructs labour, by placing the axis of the pelvic outlet at an angle so far from the line of uterine expulsion as to diminish its power.

These anomalies of pelvic inclination may be produced or remedied by posture. Excessive inclination may be prevented by flexing the spine, and this is best done mechanically; for if the abdominal muscles be employed they will, by compressing the uterus, force its fundus towards the spine, and thus defeat the end in view. It may be accomplished by supporting the shoulders and hips whilst the patient is supine, and it may be safely effected by the patient placing her feet against some fixed object and bending herself forward by dragging at a towel. Too little inclination during the first

stage may be remedied by the patient reclining on her back with a doubled pillow under her loins and little support to the shoulders. When parturition is in every other respect normal, it may be obstructed by faulty pelvic inclination; care therefore is necessary, without unduly restricting their movements, to warn patients not to assume such positions as will at any stage so tilt the pelvis as to cause it to present the axis of its inlet and outlet in lines unfavourable to fetal expulsion.

(δ.) *From Anomalies of the Pelvic Articulations.*—Physiological, traumatic, and morbid conditions of the pelvic articulations have a very marked effect upon the postures of patients. They sometimes obstruct labour by making it impossible for a woman to place herself in an expediting parturient position, but they are more particularly interesting from the effects which they have upon posture in general. The ligaments of the pelvic joints become so relaxed in some women during gestation that they can with difficulty stand or walk. The pelvic articulations are also subject to rupture during the passage of the fetal head through the pelvis. The symphysis pubis is most usually affected, and the results of the accident may be much increased by subsequent morbid action. The influence of this condition of the symphysis is graphically related by Denman:—"When the patient lay in a horizontal position she was perfectly easy, there being no weight upon the pelvis. When she was erect, the weight borne by the symphysis being greater than it could support, she could walk before she could stand; or, if she stood, she was obliged to move her feet alternately, as if she were walking; or she could stand upon one leg better than upon both, and better with her feet close than at a distance. By these various movements she took the superincumbent weight from the weakened symphysis, and

conducted it by one leg in a straight line to the ground. The fatigue of walking or of the alternate motion with the feet being more than she was able to bear, she was obliged to sit. When she first sat in her chair she was upright, resting her elbows upon the arms of the chair, by which means part of her weight was conducted to the chair, not descending to the pelvis, which was also propped ; but there being then more weight upon the symphysis than it was able to bear for any long time, and her arms being weary, by putting her hands upon her knees she took off more of the superincumbent weight, conducting it by her arms immediately to her knees. When she rested her elbows on her knees the same effect was produced in an increased degree ; but this position becoming painful and tiresome, she had no other resource, and was obliged to return to her bed." The production and removal of pubic impingement at the symphysis by the various erect postures is here most beautifully illustrated.

Anchylolysis of one or more of the pelvic articulations results invariably in distortion. The normal developmental influence of the lines of pressure produced by the various motions and positions of the body is disturbed, and deformities and contractions of the pelvis follow, with all their obstructing influence upon parturition.

(ε.) *From Malposition of the Fetus.*—In the same way as abnormal pelvic inclination may prevent the fetal head entering the brim, so may an unnatural inclination of the fetus produce the same effect. When the pelvis is contracted and the abdominal walls relaxed, fetal malpositions are very liable to take place. These displacements are determined by the posture of the mother, the breech of the child, as has already been explained, swaying hither and thither with every change of maternal position. The inclination of the

fetus may be to the front, back, or sides. If it be to the right the fetal head will press against the left rim of the brim. If the body of the mother, when this condition exists, be laid upon the right side, the fetal head will slip beyond the brim, and the shoulder will take its place. If, on the other hand, her body be inclined to the left, the malposition will be remedied, the os uteri will be restored to its normal position, and the expulsive uterine efforts will act in a direct line with the axis of the pelvic inlet. These observations apply conversely if the inclination of the fetus be to the left. In cases of pendulous abdomen, when the breech of the fetus falls forward, dorsal recumbency will restore normal relations. When the fetal head is tilted upon the symphysis pubis and its breech backward to the spine, the knee-head-ascending posture will rectify the displacement.

In all cases of contracted pelvis with lax abdominal walls it is better to advise patients to remain in a suitable recumbent posture until the head of the fetus is engaged in the pelvic cavity. With them more particularly posture at the commencement of parturition determines the position and presentation of the fetus.

(e.) *Complicated Parturition.*—The complications of parturition which may fairly be attributed to posture are very numerous. Some of these have already been mentioned under anomalies of parturition; others of a more definite character will be now considered.

(a.) *Shortness of the Umbilical Cord.*—When the funis is abnormally short, the patient when erect or walking experiences a sensation of dragging or tickling at the fundus uteri. This is produced by the fetus dragging down the portion of the uterus to which the placenta is attached, and causing slight inversion, which it is believed may sometimes be felt through the abdominal walls. If when this condition

exists the patient should receive a sudden shock from stumbling or falling the funis may be ruptured or the placenta separated. Avoidance of succussion and much recumbency are the prophylactic measures to be taken when shortness of the umbilical cord is apprehended.

(β.) *Prolapsion of the Umbilical Cord.* — The principal causes of this serious accident are pelvic deformity, the erect posture during parturition, and a long cord. When the displacement has occurred gravitation may be employed to effect or assist reposition. It may be used to act upon the fetus or funis, or upon both at the same time.

As early as 1724 Mawbray appreciated the use of posture in partial prolapsion of the navel string, and thus described his mode of treatment:—"It happens sometimes that the string without hanging down is variously compressed between the head and the bones of the pelvis, which soon occasions the infant's inevitable death. In which case, if pressed against the ossa pubis, having laid the woman on her back with her head low, and the lower part of her body raised, I would press back the infant's head, and put the string as much as possible behind it; upon which then I would bring the head forthwith into the pelvis, unless it be more convenient to turn and extract it by the feet. As also, though seldom it may happen, that the umbilical cord may be pressed back by the head against the os sacrum: in which state of affairs I would turn the woman, if strength may permit, upon her knees, whilst I employ either hand on the back parts, in order to remove the head how firmly soever fixed. Whereas, if the patient be weak, I would lay her upon either side, drawing up one foot to her belly for the advantage of obtaining more room in order to effect the same thing. But if it chances to be pressed against either of the ossa ilia, having laid the woman on the contrary side, with the lower part of her body

elevated, I would remove the head with the opposite hand and free the string : proceeding otherwise, as in the former cases, with head or feet as I should find most convenient." Unfortunately, Mawbray in giving these directions did not remember that the fetus had a breech as well as a head. Many of his instructions, if carried out, would produce the opposite effect to the one desired. If the funis were compressed upon the left side he would place the patient on her right, hoping the head of the fetus would fall away from the funis, but the real effect would be to make the breech sway over to the right, and the head to oscillate still further to the left. When posture is used to alter the position of the fetal head this movement of the whole fetus must be remembered.

Of late years the influence of gravitation has been brought to bear upon the cord itself. To effect this the patient is placed in such a position as to cause the uterus to be held with its os upwards and its fundus below. This is most easily accomplished by placing her in the knee-head-descending posture. Thus situated, reposition and retention of the funis is undoubtedly facilitated, for the tendency of its own weight must be to make it fall towards the fundus. If the patient be not sufficiently strong to maintain herself in this position, she should lie in a semi-prone posture with the hips raised by pillows. The gravitatory effect will thus, with only slight loss of its remedial power, be secured without fatigue. In either of these positions postural influence acts both upon the fetus and funis, for whilst it favours the reposition of the latter, it also removes the pressure of the former from the cervix, and opens up a passage for the return of the cord. When the funis has been replaced it is no longer desirable to maintain these postural relations. The head of the fetus should now be encouraged to enter the pelvic cavity,

for once there it shuts the door to the exit of the cord, and prevents its re prolapsion.

In cases of slight prolapsion, before the liquor amnii has escaped, postural treatment will often be found sufficient to produce reposition.

(*γ.*) *Rupture of the Uterus and Vagina.*—Indirectly posture is the cause of many uterine and vaginal lacerations. Any of the postural causes of obstructed parturition may tend to produce these accidents. Of all of them, however, the distorted pelvis is the most common, for the fetal head urged by violent pains presses for a long time the wall of the parturient canal against the points of obstruction until its structural life becomes impaired, and it at length gives way.

In the after-treatment of these ruptures the position of the patient is believed by some obstetricians to be of importance. Collins thinks psoas abscess as a sequel to rupture of the uterus may perhaps be prevented by suitable posture. "Would placing the patient in a position so as to elevate the shoulders and body, and thus facilitate the escape of any foul discharge that otherwise might lodge about the lacerated parts, be beneficial? This, I have no doubt, might be effected with perfect safety to the patient by attention to the formation of her bed, and perhaps if the collection of matter about the ruptured parts were prevented, or had a ready exit, its extension to the lumbar regions might be counteracted." Fabre also mentions the same treatment for the prevention of peritonitis after rupture of the vagina:—"On a fait remarquer que la position verticale de la femme facilitait la sortie des liquides épanchés dans le ventre; ce fait semble faire naître le précepte de donner cette position après l'extraction de l'enfant. Peut-être pourrait-on espérer par là affaiblir les causes toujours imminentes de la péritonite." This form of postural treatment is the same as has

been recommended by some obstetricians for promoting lochial drainage. It will be considered more fully hereafter.

(δ.) *Laceration of the Perineum.*—The position assumed by women during parturition has a great influence upon the frequency of perineal laceration. When the dorsal reclining and supine postures are adopted during the completion of the second stage of parturition, the fetal head has to ascend the perineal incline in opposition to gravitation, and laceration is found to occur much more frequently than when the patient kneels or lies upon the side. Indirectly posture may cause laceration by producing those deformities of the pelvic arch which force the fetal head, when passing through the outlet, back upon the perineum. Indirectly also laceration may result from the tough unyielding condition of the perineum caused by perpetual sitting.

The postural treatment, whether or no stitches be required, consists in keeping the legs together, and securing them by a bandage round the knees. Lateral recumbency should be observed during the healing process, for in the dorsal positions the skin of the sacral region is liable to be dragged upwards, and thus disturb and impede union. The discharge has also a tendency to gravitate into the vagina.

(ε.) *Parturitional Hemorrhage.*—The almost universal postural cause of hemorrhage before, during, and after parturition is standing or sitting. These positions increase the quantity of blood in the uterus, and accelerate the circulation by quickening the heart's action.

It would scarcely be advisable to extol too highly the influence of posture in checking parturitional hemorrhage, for some might be induced to trust to it when more energetic measures were required. There is nevertheless great potency in the postural method, and some have gone so far as to declare "that death from uterine hemorrhage will rarely occur

if the head be kept lower than the uterus" (Ancell). From whatever cause or source the hemorrhage may arise, and at whatever time, the postural treatment is the same, and should always be enforced, whether additional means be required or not.

The postural treatment of uterine hemorrhage is very ancient. In the Hippocratic writings it is mentioned, and a simple and effective way of raising the hips above the head is given. After recommending cold effusions and other remedies, the author writes—"καὶ τὴν κλίνην ἀπὸ τῶν ποδῶν ὑψηλοτέρην εἶναι, καὶ στορέσαι ὥδε." This excellent plan of raising the foot of the bed has been almost lost sight of. It is, however, one of the best methods of applying posture in parturitional hemorrhage. It necessitates no moving of the patient or arrangement of pillows. It is as ready as it is efficacious, and may be used with advantage in cases of uterine hyperemy as well as hemorrhage. It is also especially useful where the patient is faint, for the blood gravitates to the brain. In the treatment of moderate cases of flooding, it may be sufficient to raise the hips of the patient upon a pillow, whilst she lies in a semi-prone posture, with her head low. Thus placed, the blood has an opportunity of falling into the lower extremities, as well as the trunk, arms, and head, and the pelvic circulation is thus relieved as much as possible. When the loss has been very great, and the patient is apparently sinking, the legs and hips should be raised high, so as to throw as much blood as possible towards the brain. Necessity for transfusion may in some cases be thus avoided.

(θ.) *Inversion of the Uterus.*—This accident may result if a woman during the end of the second stage of parturition be allowed to remain erect. The precipitation of the suddenly expelled fetus to the floor causes the fundus to be forcibly

dragged down through the os—the fetus acting upon the funis, the funis on the placenta, and the placenta upon its seat of uterine attachment. The same displacement may be caused by sitting or standing postures soon after the completion of fetal parturition, for in these positions the superincumbent weight of the intestines, pressing upon a flabby and badly contracted uterus, may force the fundus down through the relaxed cervix.

In reducing recent inversion of the uterus, the patient should be placed either in the semi-prone position with the hips raised, or in the knee-head-descending posture.

(η.) *Parturitional Convulsions.*—Uremic eclampsia occurring before or during parturition may be caused by structural or functional disorder of the kidneys. The latter is frequently produced by pressure of the gravid uterus upon the kidneys and renal veins, when the patient remains too long in the sitting or standing postures. Convulsions of this origin rarely appear before the uterus has reached considerable size, that is, before the fifth month. They usually come on during the last month or two of gestation, but more particularly just before or during parturition, the peculiar nervous condition of the patient at that time being sufficient to convert the predisposition into a reality. They disappear when parturition has reduced the size of the uterus. Passive renal hyperemia is the cause of this form of eclampsia. The renal veins are obstructed by uterine compression and distension, and exudation from the renal capillaries follows. Albuminuria occurs most often in first gestations, and this is accounted for by the walls of the abdomen being less yielding, and thus causing greater depression of the uterus. Dr. Brown-Séquard found by placing a patient in such a posture as to remove the pressure of the uterus from the renal veins that albuminuria dis-

appeared, but that it returned when she again assumed her ordinary position.

The postural treatment of convulsions may be preventive or curative, and both ends are to be obtained in the same manner. Patients suffering from albuminuria during gestation should not remain upright longer than is necessary to enable them to take sufficient exercise to keep up their general health. When convulsions have arrived, and parturition cannot be completed, such posture should be recommended as will remove the uterine pressure. The semi-prone position, with the hips raised, would be best, as it would have the desired effect, and not interfere with the administration of chloroform.

19. *Placental Parturition.*

Too much importance cannot be attached to the management of the third stage of labour, for upon the skilful removal of the placenta depends the speedy recovery and future health of the mother. After the expulsion of the fetus, another labour upon a small scale commences; the uterus is in the same axial position as it was at the beginning of parturition, and from it the after-birth has to be expelled. This should be the act of the uterus. If we wish to assist it by gravitation, the patient must be placed as nearly as possible in the posture which at the commencement of labour is theoretically correct—dorsal reclination. This position may be assumed at the end of the second stage with safety and advantage, for thus placed, besides the gravitatory advantage, the fundus of the uterus may be easily reached and pressure effectively employed, if it should be necessary. In this posture also the air is prevented from entering the vagina.

20. *Anomalies of Placental Parturition.*

The expulsion of the placenta is sometimes delayed by uterine displacements. Of these the one which most frequently causes difficulty is antrorsion. This will, however, be found to occur less often if dorsal reclination be adopted during the third stage of parturition. Any of the other displacements may readily be reduced by appropriate postural treatment.

The Hippocratic writings hand down to us a most ingenious but reprehensible method of treating, by gravitation, retention of the placenta. It is thus described:—"If the after-birth does not come away early, the child should not, if possible, be detached from it. The woman should be seated on a stool and the child suspended upon something raised, so that its weight tends to draw out the after-birth. This should be done gently, without violence, so that no unnatural forcing of the parts should cause inflammation. To this end some wool newly carded, and forming a bulky volume, should be placed under the child upon two leather bags tied together and filled with water, which are to be emptied by degrees—the wool to be above the bags, and the child above the wool. The two leather bags are then to be pierced with an awl, so as to allow the water to escape slowly. As it runs out the bags collapse, and as they collapse the child draws down the cord, and the cord the after-birth. If the woman cannot remain seated on a stool, she must be placed on a perforated chair with a back. If she be too weak to sit up at all, the head of the bed should be raised as much as possible, in order that the weight of the child may cause a dragging down. The patient should be fastened below the armpits to the bed outside the counterpane by means of a wide soft band, so that the body may not move when the bed is lifted.

In the same manner, if the cord breaks, or if it be cut too soon, by attaching suitable weights to it the after-birth will be drawn away."

Posture can never be depended upon for the removal of the placenta, either in normal or untimely parturition. Operative procedures are usually necessary when any delay arises, and it is only as an auxiliary on these occasions that positional treatment can be of any avail.

21. *Puerperal Posture.*

It is exceedingly interesting and instructive to observe the various opinions which obstetricians have held in reference to the postural treatment of women after parturition. In their own words, therefore, the reader is here presented with excerpts from the writings left us by men well known in obstetric literature. Space renders it necessary to take these quotations from British authors only. Similar variations of opinion may, however, be found in the works of foreign writers on midwifery.

PRIMROSE.—"Crura habeat decussatim collocata ut impediatur transitus aeri frigido."

WILLUGHBY.—"The women have a custome to make an upsitting at the fourth day. James Woolveridge, M.D., a late writer in midwifery adviceth women to keep their bed five days at the lest, after delivery. For hee saith, I know 'tis usuall for them to rise at three dayes end; but this to bee sure, the longer women contain themselves in their bed, the more secure they are from danger."

SERMON.—"There must be laid under her hams a little pillow doubled, that she may be somewhat kept up; so that her thighs and legs lye not strait, let her neither lye along nor sit just upright, but between both, having her head and body

rather raised than laid low, that her natural purgations may with more ease pass from her."

SMELLIE.—"The patient must be kept quiet in bed till after the fourth or fifth day, and then be gently lifted up in the bed clothes in a lying posture, until the bed can be adjusted, into which she must be immediately reconveyed, there to continue for the most part till the ninth day."

JOHNSON.—"She may lay herself on her right side, and being covered with such quantity of cloaths as accustomed to when in health, she should continue in bed till the fifth day, unless the climate or the weather be extremely hot. After the first week she may rise every day, and sit at first about an hour or two, and then longer as her strength recovers."

CAMPBELL.—"After a suitable period has been allowed for repose the patient is to turn upon her knees to void urine, accumulations in the vagina, and excoriations are thus prevented. Few of the better ranks leave their beds before the end of the first week."

GOOCH.—"The recumbent posture must be strictly preserved, she must not on any pretext be got upright for one moment."

DENMAN.—"I am fully persuaded that laying aside all refined speculation those patients will fare best and recover most certainly and speedily by whom the least change from their former habits is made."

RYAN.—"The woman should not rise or walk about while it (the lochial discharge) continues."

DAVID DAVIS.—"The duty of maintaining steadily a horizontal position during many days after delivery should be communicated at once to the patient."

BURNS.—"The patient ought not to rise earlier than the third day, and in a day or two longer she may be allowed to be dressed and sit a little."

BLUNDELL.—“It can seldom be necessary or proper to raise her to the erect posture.”

WHITE.—“Getting out of bed is the most effectual and safest method of promoting the lochia. In women confined to a horizontal position for many days together, both the stools and the lochia are prevented from having a free exit. The lochia stagnating in the womb and in the folds of the vagina soon grow acrid. These are in part absorbed by the lymphatics in the womb and vagina, and the effluvia from them make the air in the bed and in the room more putrid; this air is taken into the lungs, and is then again received into the circulation. True puerperal fever is originally caused by a putrid atmosphere, or too long confinement of the patient in a horizontal position.

“In a few hours after delivery, as soon as the patient has had a little rest, she should sit up in bed. The patient should lie very high with her head and shoulders, and should sit up in bed many times a day, especially when she takes food, and as often as she suckles her child, and should kneel whenever she has occasion to make water, which should be done often. This frequent upright posture is of the utmost consequence, and cannot be too much enforced. It prevents the lochia stagnating, the stools and urine from being too long retained, and promotes contraction of the uterus and abdominal muscles. My patients generally sit up in bed in a few hours after delivery, some of them get out of bed the same day, most on the second, and none exceed the third; and lest any inconvenience should be supposed to arise from this early upright posture, I think it necessary to declare that none of whom I have delivered are troubled with any prolapsus vaginæ or any other complaint which I have the least reason to suspect could possibly arise from such treatment. I speak from facts which cannot deceive me, founded upon my

father's experience of more than sixty years, and upon my own of above two-thirds of that period."

KIRKLAND.—"In moving the patient to her own bed after she has recovered her spirits, I always direct her assistants to raise her up a little, or if she is able, that she should walk a few steps; as by thus stirring her about whatever blood may have lodged is commonly discharged. Every person whose business requires him to attend lying-in women must have observed where there has been little or no discharge of the lochia during lying in bed, for two or three days, that in consequence of occasionally getting up or moving into an erect posture, large coagula of blood have been discharged by their own weight, and all has gone on well. Therefore, when we suspect coagulated blood to be lodged in the uterus a day or two after delivery, the patient should sit up in bed, or even be carefully gotten up, if necessary; by which means I have seen future mischief prevented by the coming away of the coagula."

RAMSBOTHAM.—"The woman must be kept in the recumbent posture as much as possible for at least a week. It is better that she should not sit up even to have the bed arranged for that time."

ROBERTON.—"After delivery the women (wives of Manchester artisans) will often on the same day sit in bed to dress and undress their children. By the fifth day at the latest she is up and dressed, and if nothing unpropitious has happened, engages in her ordinary avocations. The smaller mortality of these women (one in seven or eight hundred) who perform unaided their household work deserves and will no doubt yet receive further investigation."

TYLER SMITH.—"Those who get up too early suffer from hemorrhage and prolonged lochial discharge owing to the absence of valves in the uterine veins and the momentum of

the blood downwards. The patient should remain eight or ten days pretty much in the horizontal position."

No attempt will here be made to criticise these opinions. Many of them contain thoughts startling and worthy of close attention. The exclusion of air from the vagina, the prevention of lochial stagnation, and the influence of the erect posture in producing uterine hyperemy, and displacement, are all points claiming our careful attention as much now as of yore.

22. *Lochiation.*

After parturition the exfoliation of the decidua is accompanied by a flow of lochial fluid analogous to menstrual fluid. The act of excretion being in one case called menstruation may not inaptly in the other be designated lochiation. To insure the safe and complete execution of this function the position of the patient must receive attention. The best posture is that which provides free lochial drainage without producing hyperemy or displacement of the pelvic organs. To effect this no one position should be prescribed or permitted, but the patient should be encouraged to change her positions naturally and as she would do ordinarily when lying down. She should also be allowed to sit up for a few minutes in bed when she takes food or nurses her infant, and more especially during the latter act, for the uterine contraction produced by suckling expels lurking clots and fluid, and the sitting posture gives a chance of their being removed by gravitation from the vagina. She may also be permitted to assume the knee-head-ascending or sitting postures when the bladder or bowels are relieved. These concessions are, however, made on the supposition that the patient is strong and healthy. Also that she has passed through the parturient period without difficulty or accident, and no special counter-

indications exist. The management of each case must of course be regulated according to its character. No posture should be insisted upon which is painful to the patient, although it may be theoretically correct. Sometimes patients cannot lie at ease on either side. In such cases dorsal re-clination should be advised, for elevation of the shoulders so alters the axis of the vagina that lochial stagnation may be thereby prevented.

23. *Anomalies of Lochiation.*

Disordered lochiation produces symptoms varying from slight uneasiness to pain of the most distressing character and fever most fatal. It seems strange that a process so simple should be attended with such dangerous results ; but the fact is indisputable. Careful consideration of the subject is therefore necessary.

(a.) *Obstructed Lochiation.*—Posture may prevent the free escape of the lochial fluid in two ways ;—1st. By allowing the patient to remain in such a position as will cause the fluid to stagnate by gravitation, the orifice of the utero-vaginal canal being uppermost ; 2nd. By producing occlusion of this canal by utero-vaginal displacement.

(a.) *Stagnation.*—Cessation of the lochial flow has at all times been looked upon as a serious symptom. When it results from stagnation the position of the patient will be found to be such as to allow the uterus and vagina to remain below the level of the vulva. Of these two the vagina is most important, for the uterus, by its contractile power, is able to expel its contents, however it may be placed, but the vagina is some time in recovering from its great distension and regaining its normal calibre. When a patient is placed flat on her back, a posture which ignorant nurses are fond of

prescribing, and kept lying so for many days, the axis of the vagina inclining from before downward and backward, must necessarily favour the stagnation of the lochial discharge. Retained in the vaginal fundus it decomposes, becomes offensive, and by resting in contact with the almost invariably wounded surface of the cervix uteri produces alarming symptoms.

(β.) *Retention*.—The exit of the lochial fluid may be arrested by mechanical obstacles of direct or indirect origin. Directly, the utero-vaginal canal may be occluded by abrupt bends in it caused by postural displacements of the heavy uterus. Indirectly, retention may result from displacement of the uterus produced by the weight of the abdominal viscera when the patient rises too soon; also by over-tight bandaging, which forces the enlarged uterus into the pelvic cavity before there is room to accommodate it.

(b.) *Septicemia*.—Obstructed lochiation is a frequent cause of puerperal fever. This fact renders the question of puerperal posture one of the utmost concern. To advise a patient to remain in a position after labour which will render her liable to lochial stagnation or retention is to submit her to a most unjustifiable and dangerous ordeal. During labour the cervix uteri is nearly always slightly lacerated or abraded, and in this condition it is ready to absorb septic matter from any decomposed lochia in which it may be bathed.

Postural treatment may prevent and, if discovered early, cure septicemia. It will be much less frequently met with if patients are treated in a more rational way, and the happy medium hit between too little and too much liberty of motion after delivery. Of the two evils, however, too much liberty is the less. The woman who begins her household work soon after the birth of her child will have a better chance of recovering well than she who lies perfectly quiet on

her back for a fortnight. When symptoms of septicemia appear the utero-vaginal canal should be washed out with an antiseptic fluid, whilst the patient is placed on her side with the shoulders raised, after which care should be taken by the adoption of suitable postural treatment to prevent the reaccumulation of lochial fluid.

(c.) *Excessive Lochiation.*—If a patient after parturition rise too early, or sit and stand for too long a time, gravitation of blood to the uterus will take place, and excessive lochial flow will frequently follow. Although lochiation may have nearly ceased it will be liable to return again under these circumstances; the discharge which may have become scanty and faded in colour will increase in quantity and again appear red, or the lighter coloured discharge may become more copious without change of tint. Excessive lochiation weakens the patient, and is symptomatic of uterine hyperemia with its train of consequent disorders.

The postural treatment of this condition is rather perplexing, for if, as is indicated, the hips of the patient be raised, lochial stagnation will be produced. This, however, is the only remedial position, and it should be prescribed. If the shoulders be raised every eight hours, and antiseptic vaginal injections used, the evil influences of lochial stagnation may be averted. In adopting this posture care should be taken that the abdomen of the patient be properly bandaged, for without this precaution vaginal respiration, tending to hasten lochial decomposition, will probably occur.

24. *Involution.*

Although this term is usually employed only to express that gradual process by which the uterus after parturition is reduced in size, it has really a much wider signification.

Involution in its general puerperal sense includes a number of special structural restitutions which may be effected by contraction or atrophy. These influence alike the uterus, vagina, vulva, abdominal walls, heart, distended veins, &c., and all must be included under puerperal involution.

(a.) *The Uterus.*—Marvellous is the process of uterine involution. In six weeks this organ from weighing three pounds becomes reduced to three ounces. To insure this rapid atrophic action diminished blood supply is necessary, and this should be effected by contraction and gravitation. Uterine contraction is best secured by suckling; gravitatory hyperemy is best avoided by suitable posture.

(b.) *The Vagina and Vulva.*—Although these, like the uterus, undergo hypertrophic change during gestation, it is to a very much less extent. They have, however, during parturition to suffer great distension, and some time must elapse before they can return to their normal substance and calibre. Both these processes may be assisted by the patient adopting such positions as will prevent passive pelvic hyperemy.

(c.) *The Abdominal Walls.*—If a woman passes the greater portion of her gestational period standing or sitting, the weight of the fetus pressing upon the lower and anterior part of the abdominal walls will gradually distend them until they become thin and weak, and muscular splitting occurs. A carefully-applied bandage, more especially when the patient walks or sits, will materially assist them in regaining their contractile power and former tension.

25. *Anomalies of Involution.*

Posture has a marked influence upon all the puerperal involutionary processes. It may accelerate or retard them, and, in

the latter case, lay the foundations for prolonged ill-health, or even give rise to fatal accidents.

(a.) *The Uterus.*—The functional disturbances which result from arrested involution have already been considered. Its influence upon the structure of the organ will, therefore, now be noticed.

(a.) *Subinvolution.*—This is very frequently due to passive pelvic hyperemy, caused very generally by the continuous dorsal reclining posture which ladies adopt during puerperal convalescence, or by the constant standing and sitting which poor women are obliged to commence and continue during the same period. In these postures the blood gravitates to the uterus, and supplies nutriment to the tissues which should be undergoing atrophy. No muscular action accelerates the circulation and keeps the blood in motion. The reclining lady, therefore, suffers more than the poor woman, whose duties necessitate change of position.

(β.) *Displacement.*—During involution the uterus, owing to its weight, is liable to become displaced. Prolapsion occurs very frequently. The womb may also gravitate in various directions, and most commonly backward, producing retrorsion. This is caused by prolonged supine posture after parturition, and is very apt to become permanent, for the uterus during involution assumes the shape impressed upon it by the distortion, and cannot readily be made to part with it except by artificial or physiological redevelopment. Suitable puerperal posture will prevent these dislocations.

(b.) *The Vagina and Vulva.*—Whilst gestation is progressing these organs become developed, the vagina growing large and wide and the vulva gaping. It is some days before involution restores them to their natural state, and during this time disorders may arise of serious importance.

(a.) *Vaginal Respiration.*—This peculiar pseudo-function

generally displays itself when subinvolution of the vulva and vagina, and a relaxed condition of the abdominal walls exist.

(1.) *Mechanism.*—The mechanism of vaginal respiration is exceedingly simple. The pelvic cavity is like the curved barrel of a bony syringe. The pelvic and abdominal contents form the piston, and this piston can be actuated in two ways.

Thoracic.—If the perineum of a woman when lying down be watched, it will be observed to protrude and recede with every pulmonary expiration and inspiration. These motions are caused by the to-and-fro movements of the viscera responding to the impulsion of the respiratory muscles. The author has observed a case in which, the vulva being relaxed and the uterus prolapsed, air was drawn into the vagina by expiration and expelled by inspiration. This occurred at every respiration, and annoyed the patient whilst in bed by producing an audible puffing sound each time air escaped from the labia.

Abdominal.—This form of vaginal respiration is caused by gravitation of the abdominal viscera, and its extent is determined by the tension of the abdominal walls. When the contents of the pelvis and abdomen are allowed to fall below the level of the vaginal orifice, gravitation draws them out of the pelvic inlet and produces the piston-like action already described. If from any cause the mouth of the vagina opens, or is opened, air will rush in, and the depression in the perineum will disappear. This is the most frequent form of vaginal respiration. It occurs to a greater degree when the abdominal walls are relaxed from childbearing, and with more serious consequences during the puerperal period than at any other time.

(2.) *Septic Influence.*—It is well known that the contact of

air with the lochia promotes its decomposition, and thus favours the occurrence of puerperal fever. The older writers fully understood the importance of excluding air from the vagina after parturition. Thus we find Primrose advising the puerperal patient to insure vulvar occlusion by lying with her legs crossed.

(3.) *Venous Aspiration.*—A vacuum having been formed, and air entered the vagina, it is easy to understand how this suction-power may be communicated to the veins, and cause any fluid which may be in the neighbourhood of the open mouths of varicose veins or large sinuses to enter. It matters not what this fluid may be. Whether it be lochial discharge or air the result will be the same. Many of the cases of fatal collapse after labour, caused by entrance of air into the veins, are doubtless consequent upon vaginal respiration, and many cases of septic absorption are no less likely to be caused by the same mechanism. The same aspirating power will cause air or fluid to enter abscesses opening into the vagina, also into the peritoneal cavity or cellular structures (emphysema) through vaginal lacerations.

(4.) *Treatment.*—Vaginal respiration, although annoying to the patient, is not dangerous except during the puerperal period. To prevent it two prophylactic measures are to be taken—abdominal support and suitable posture. After placental delivery a broad binder should be applied, with moderate pressure, over the whole abdominal surface. This, besides affording comfort to the patient, will obviate vaginal respiration by preventing the abdominal viscera from receding from the pelvic inlet. After this any comfortable reclining or recumbent positions may be adopted in turn for the first few days of the puerperal period. Until the normally antverted uterus has entered the pelvic cavity the dorsal reclining or supine posture may at times be used.

(c.) *The Veins.*—The venous trunks in the pelvis, legs, and abdominal walls nearly always become dilated during the latter months of gestation, owing to the obstruction to the return of the blood, caused by pressure of the gravid uterus. The distension thus produced occasionally becomes excessive, and a varicose condition of the veins is observed. This dilatation, although it may not entirely disappear, will, with proper postural treatment, become much reduced as the general process of involution proceeds.

(a.) *Thrombosis and Embolism.*—In the distended pouches of these varicose veins the circulation stagnates and clots form. If this has occurred, danger during the puerperal period must be apprehended, for the obstruction to the circulation being removed and venous involution proceeding, the detachment of one or more of these clots is to be feared. There can be little doubt but that embolism is often thus originated.

Where a varicose condition of the above-mentioned veins is known to exist during gestation, great care should be taken of the patient whilst involution progresses. The mechanical detachment of clots should be avoided by rest and recumbency. No exertion must be permitted, and the circulation must be kept quiet by horizontal posture.

26. *Urination.*

In the female this is a very simple function, the urethra being short and capacious, and offering little resistance to the free flow of urine. Posture is naturally employed during the act in such a manner as to assist the expulsive efforts of the bladder by compression and gravitation of its contents. The squatting position affords the former, the thighs pressing upon the bladder through the abdominal walls. The latter

is best insured by maintaining the trunk upright, and slightly bending forwards.

27. Anomalies of Urination.

The functions of the urethra and bladder are very liable to be disturbed by disorders of the neighbouring organs. In fact, although some of the anomalies of urination are to be looked for in abnormal conditions of its proper viscera, the greater part of them will be found to arise from uterine, vaginal, and other displacements.

(a.) *Obstructed Urination.*—The causes of postural origin which lead to obstruction of the flow of urine are dislocation, compression, occlusion, and hyperemy, and these may occur either in the urethra or bladder.

(a.) *Urethral.*—Dislocations of the urethra have already been referred to in a previous chapter. They are usually of indirect origin, being produced by displacements of organs to which it is more or less intimately attached. It is pulled backward and downward by retrorsion of the bladder, and also by prolapsion of the uterus. It is also seriously dislocated by ovarian, uterine, and other pelvic tumours, and by retrorsion of the uterus, especially during gestation and involution. The urethra may be compressed against the symphysis pubis by an enlarged uterus, or by post uterine tumours pressing the organ forward. Vaginal tumours and uterine polypi which have descended into the vagina will also, when the patient is erect, obstruct the urethra by pressure, as also will vaginal pessaries. Urethral occlusion may result from polypi, foreign bodies and calculi gravitating into it from the bladder. Hyperemy of the urethra may cause obstruction by producing intumescence of its mucous membrane, or hyperesthesia with spasmodic contraction.

As obstructions of urethral origin can be caused in so many different ways, evidently postural treatment must also be various. It is remarkable what a number of odd positions patients will discover by experience, and place themselves in, to assist in alleviating or overcoming the distress of obstructed urination. Some will lie on the back, face, or sides, others will kneel or prostrate themselves, or sit or stand, and at the same time incline their bodies forward, backward, or to either side. The particular postural remedy for each cause must be selected ; as a general rule, however, recumbency will be found most efficacious. By the early and intelligent use of posture the employment of the catheter and other operative procedures may often be avoided.

(β.) *Vesical.*—The bladder may be dragged out of its position by dislocated annexed organs ; it is also liable to be drawn down, when the patient is erect, by the weight of urine resulting from prolonged voluntary retention. When the vagina is relaxed, and the vesical prolapsion extreme, complete urination is impossible. Obstruction may also be caused by compression. Any intra-abdominal weights rendered more powerful by debased pelvic inclination will produce this. The most common is the gravid uterus. Many women suffer during the latter months from obstructed urination. To them sitting or standing is torture, and recumbency is their only comfortable position. This obstruction is not entirely due to mechanical compression, but to the hyperesthesia and tenesmus which passive hyperemia produces.

Sermon understood the influence of posture in causing vesical compression. "Sometimes it happeneth through the ponderosity or weightiness of the womb which resteth in the bottom : so that women with child cannot make water. Then with both their hands let them lift up the bottoms of

their bellies, by which the body of their womb will be hindered from pressing down and crushing the bladder." To prevent pressure of the bladder during gestation, a woman must adopt such a position when erect as will preserve the normal pelvic inclination. Debased inclination of the pelvis removes the weight of the uterus from the anterior abdominal walls, and throws it more directly into the pelvic inlet. Thus vesical compression takes place, and is intensified by the succussion of walking.

(b.) *Frequent Urination*.—All the postural causes of passive vesical hyperemy will cause an irritable condition of the bladder, and inability to retain more than a small quantity of urine. Displacement, direct pressure, and the erect position will have the effect of bringing into existence various forms of hyperemy and consequent hyperesthesia. Vesical distension then becomes unbearable, and frequent urination a necessity.

(c.) *Painful Urination*.—Any of the causes of frequent and obstructed urination are apt to end in causing pain when the urine passes the neck of the bladder or traverses the urethra. Morbid changes in the mucous surfaces of these organs resulting from postural hyperemy often produce painful urination.

The postural treatment for this condition, as well as for frequent urination, is satisfactory. Both are immediately relieved by recumbency, and this position co-operating with other measures will be found materially to expedite recovery. In both also debased pelvic inclination should be avoided.

28. Defecation.

Posture has an easily recognisable effect upon this function. As in urination, the expulsion of feces from the rectum

may be assisted by position. The normal postures for defecation are sitting or squatting. In the former the descent of the matter is favoured by gravitation. In the latter, more especially when the body is inclined to the left, the advantage of abdominal compression is attained. When standing, defecation is rendered difficult by the approximation of the nates. In this posture flatus is with difficulty passed ; when the knees are drawn up, however, or the legs separated, the obstacle is removed. Defecation in the recumbent position is difficult, unless the knees be drawn up or the rectal contents be fluid.

29. *Anomalies of Defecation.*

It has already been observed how great an influence posture has in causing disorders of the anus and rectum. It is equally able to produce functional disturbance.

(a.) *Obstructed Defecation.*—Either direct or indirect displacement of the rectum will cause rectal obstruction. The direct obstructions are produced by tumours of the gravid uterus, compression occurring when the body is in an erect or dorsal reclining posture. Indirectly, the maintenance of easy positions to the exclusion of exercise is a most frequent source of constipation. Succussion of the abdominal contents and contraction of the abdominal muscles, such as take place when walking, skating, running, dancing, and riding, are all powerful in promoting the onward passage of feces, and should be prescribed except counter-indicated by obstructive displacements. The constant taking of purgative pills, which is so common with women, is almost invariably due to their inactive and sedentary employments.

(b.) *Frequent Defecation.*—Passive hyperemy of the intestines and rectum sometimes results in hyper-secretion and

an irritable condition of the mucous surface. A fluid state of the feces thus occurs, and a constant desire to defecate. Both cause and effect may in these cases be readily banished by recumbent posture. Diarrhea, from whatever cause, will always be lessened, and sometimes cured, by recumbency alone.

(c.) *Painful Defecation.*—Pain during defecation, very often continuing long afterwards, is experienced by patients suffering from hyperemic disorders of the anus and rectum. Piles, fissures, and ulcers, and all the other changes of the mucous membrane of these parts, which so often afflict persons of sedentary habits, have each their own peculiar characteristic pains, varying from the dull heavy ache to the sharp agonising pang. All these may be relieved by recumbent posture, whilst other necessary treatment will be assisted by placing the patient in such a position as will prevent pelvic blood stasis. In slight cases of rectal hyperesthesia and tenesmus, postural treatment without operative interference will often be found sufficient.

CHAPTER V.

POSTURE AS INDICATING ABNORMAL CONDITIONS OF
THE PELVIC ORGANS.

THE difficulty of ascertaining the condition of internal organs when diseased is so great that at all times every available method of diagnosis has been eagerly sought and adopted. Hippocrates, in his "Book of Prognostics,"* draws attention to the importance of position as indicative of disease, and since his time all medical writers have more or less minutely pointed out its diagnostic value.

It will be found that the majority of postures taken by patients is assumed by them to relax muscular tension, to insure rest, to relieve hypostatic hyperemia, to rectify displacements, to maintain corporeal equilibrium, or to remove or effect external pressure. All these are adopted chiefly for one end—the avoidance of pain, and all of them are curative

* "It is well when the patient is found by his physician reclining upon either his right or his left side, having his hands, neck, and legs slightly bent, and the whole body lying in a relaxed state, for thus the most of persons in health recline, and these are the best of postures which most resemble those of healthy persons. But to lie upon one's back with the hands, neck, and legs extended, is far less favourable. And if the patient incline forward and sink down to the foot of the bed, it is a still more dangerous symptom; but if he be found with his feet naked and not sufficiently warm, and the hands, neck, and legs be tossed about in a disorderly manner and naked, it is bad, for it indicates aberration of intellect. It is a deadly symptom, also, when the patient sleeps constantly with his mouth open, having his legs strongly bent and plaited together while he lies on his back; and to lie upon one's belly when not habitual to the patient to sleep thus when in good health, indicates delirium or pain in the abdominal regions. And for the patient to wish to sit erect at the acme of the disease is a bad symptom in all acute diseases, but particularly so in pneumonia."—*Sec. III. Adams's Translation.*

in their effects, and excellent examples of what has been appropriately called "Natural Therapeutics." They may act simply or in combination, and their application to individual diseases of the pelvic organs must be left to the judgment of the practitioner.

1. To Relax Muscular Tension.

Every medical man must be familiar with the postures assumed by patients suffering from painful affections of the pelvic contents. If a woman thus afflicted be observed standing or walking, the spine will be found flexed, the pelvic inclination debased, and the body bent forward to a marked degree. If she be sitting, the body will be inclined anteriorly, and occasionally more to one side than the other if the pain has a lateral origin. If she be lying down, she will usually be found upon the back, with the spine flexed mechanically and the knees raised. If she assume the lateral recumbent posture, the same flexion of the spine and thighs upon the trunk will be noticed.

By all these postures the muscular walls of the abdomen are relaxed, and consequently its contents are pressed with less force upon the painful organs in the pelvic cavity.

2. To Insure Rest.

In cases of pelvic inflammation, something more than the relaxation of the abdominal muscles is required to relieve pain. It will be found that a patient thus affected most carefully maintains the posture she has assumed. If she be standing or walking, the body will be observed to be bent always at the same angle; if she be sitting, the elbows will be used to preserve the exact posture, and in bed the spine will be found flexed mechanically by a pillow under the

shoulders, and the thighs raised and held in position by the feet resting on the bed.

By all these contrivances the pelvic organs are held as far as possible motionless, and much pain is avoided.

3. To Prevent External Pressure.

To avoid pain from external pressure, patients are compelled to assume many different postures. When standing, the weight of skirts suspended from the waist is sometimes a cause of pain, but perhaps no particular remedial posture is in this case adopted to relieve it. In sitting, diseased conditions of the vulva, urethra, and anus cause patients to sit awkwardly upon one buttock, or upon the edge of the seat. When recumbent, the pressure of the surface rested upon cannot in most painful conditions of the pelvic organs be endured. The back is then the only part which can bear pressure with impunity, and consequently in the dorsal recumbent posture patients are compelled to lie for weeks or months. When the disease affects only one side, the sound side may be laid upon ; but this is far from being invariably the case, for the lateral displacement of the affected organ or parts which results, sometimes produces great pain.

4. To Effect External Pressure.

Where pain is relieved by pressure, patients learn to assume remedial postures. Compression of the pelvic contents is effected in various ways. When standing, a woman relieves herself by extending her elbows, and pressing downward with her hands. When sitting, by leaning forward, forcibly flexing the thighs upon the abdomen, and contracting the abdominal muscles ; and when recumbent, by lying upon her face with the hands or some other resistant body placed under the lower part of the abdomen. The writer

has met with the case of a poor girl who suffered intensely at her menstrual periods, and who discovered that she could relieve her pain by pressure. To effect this she would lie with the lower part of her abdomen upon the wooden frame at the edge of the bed, with her legs on a chair and her head and shoulders in the middle of the bed. In this posture she every month procured ease and sleep. She was completely cured by division of the cervix.

Pain in the back, caused by long maintenance of the erect posture, and reflected by some abnormal condition of the pelvic organs, may often be relieved by pressure; and women finding this out may frequently be seen standing with their hands firmly compressing the painful spot.

Hysterical attacks, connected with a painful condition of the ovary, may sometimes be cut short by applying firm pressure to the affected organ, and this can best be done when the patient is on her back.

5. *To Remove Hypostatic Hyperemy.*

Women who are subject to hyperemy of the pelvic organs cannot stand or sit up for any length of time without feeling weight, fulness, dragging, and pain in the back and region of the pelvis. So severe is this, that they are obliged to disregard the conventionalities of society, and sit when others stand, or lie down when others sit. This subject has been fully considered in the Third Chapter.

6. *To Rectify Displacements.*

In all displacements of the pelvic viscera, patients unconsciously find out and adopt the posture which rectifies the dislocation causing their pain. She who suffers from uterine antrersion finds herself most comfortable when lying on her back. When retrorsion is the cause of pain, the patient lies

upon the face, and when dextrorsion or sinistrorsion exists, relief is obtained by the woman lying on the side opposite to that toward which the womb falls. If a pelvic organ be highly hyperemic and painful, its slightest displacement causes pain. When this is the case, dorsal recumbency is the only posture tolerable, for lying upon the side causes lateral displacement and pain, increasing in intensity with the prolongation of the posture.

When displacement upward of an enlarged ovary or uterus fills the abdomen, and encroaches upon the thoracic cavity the functions of the stomach, heart, and lungs are disturbed. The pressure which causes these functional derangements may be removed by the patient sitting up, when the tumour gravitates from the affected organs, and relief is obtained.

The numerous interesting postures indicating loosening of the pelvic articulations, and adopted for the relief of the patient, have been fully described under the heading "Anomalies of the Pelvic Articulations."

7. To Maintain Corporeal Equilibrium.

Tumours of the pelvic organs rising into the abdomen like the gravid uterus in an advanced state of pregnancy necessarily produce change of posture. To poise the trunk upon the heads of the femora, the weight in front has to be counterbalanced by throwing the shoulders and upper part of the trunk backward. In phantom tumours and spurious pregnancy this change of position does not take place ; and thus a good postural diagnostic sign is afforded.

Lameness, paralysis, and contraction of the extremities should not be forgotten as possible postural signs of uterine and ovarian disorder ; nor should spinal curvatures, and other corporeal deformities, be neglected, as indications of pelvic distortion.

CHAPTER VI.

POSTURE IN GYNECIC EXAMINATIONS AND OPERATIONS.

THIS is a subject of the greatest practical importance, for if a patient be not placed in a suitable position, the information sought during an examination may be altogether missed, or the success desired in an operation entirely lost. The proper posture for each proceeding should be well known beforehand. Without this knowledge the patient will often have to submit to unnecessary pain and annoyance, and the practitioner to loss of time and reputation.

I. *The Vulva.*

(a.) *Examinations.*—As a rule, all examinations of the external female genital organs are best made with the patient in a dorsal position, with the knees separated. In the lateral recumbent posture the labia are naturally approximated, and the parts situated anteriorly cannot be properly brought into view. If a tactual examination only be required, the patient may remain in bed, with her body in the ordinary direction. Visual examinations cannot be satisfactorily conducted without placing the woman across the bed, in a good light, with her hips near the edge, but not so near as to prevent her resting her feet on the bed. In all examinations, whether upon the side or back, the proceeding is rendered more decent, and less likely to offend the delicacy of the patient, by throwing over her lower extremities a large light cloth, or shawl.

Hernia of the vulva may be distinguished from other tumours by examining the patient when upright and recumbent, increased protrusion in the former posture being the diagnostic symptom.

(b.) *Operations.*—In all applications, ablations, or other operative procedures upon the labia, nymphæ, clitoris, hymen, and adjacent structures, the dorsal position is the best. In this posture anesthetics, when necessary, may be conveniently administered, visual and tactual examination is rendered easy, and manipulation, consequently, proportionately facilitated.

2. *The Perineum.*

(a.) *Examinations.*—The perineum may be best examined when the patient is on her side. She should be laid across the bed or couch, with the hips near its edge, and knees drawn up.

(b.) *Operations.*—In perineal plastic operations, the patient should be placed on her back upon a table, the buttocks brought near its edge, and the knees held up, and well back, by assistants, crutches fixed to the table, or other mechanical contrivances.

3. *The Urethra.*

(a.) *Examinations.*—The meatus and canal of the urethra can only be examined visually when the patient is on her back, with the knees separated. Tactual exploration of the meatus can be made when the woman is in any posture, but the amount of information thus obtained is scarcely ever sufficient.

(b.) *Operations.*—Passing a female catheter is the most frequent operation performed in connexion with the urethra. It is most easily done when the patient is on her back. If

in bed, she need not change the position of her body. It is only necessary that she should open her legs sufficiently to enable the operator to pass one finger into the mouth of the vagina as a guide to the introduction of the instrument, and to place a dish between the thighs. If artificial light be required to find the meatus, this posture still holds good, but if daylight must be used, the patient should be placed with the urethral orifice opposite a window.

The dorsal posture is also the best for making applications, dilating, removing small tumours, and, in fact, for all operations upon the urethra.

4. The Bladder.

(a.) *Examinations.*—The bladder can be most effectively examined when the patient is on her back. In this posture the bi-manual method can be best employed, as also can the tactual manœuvres for detecting distension of the organ by urine, or for exploring it by the finger after urethral dilatation.

(b.) *Operations.*—In lithotrity, the patient is best placed in the dorsal reclining posture. If, however, the stone cannot be seized when she is in this position, recumbent and lateral postures should be tried. Vesical injections are also best performed when the patient is on her back.

5. The Vagina.

(a.) *Examinations.*—Of all the pelvic organs this is the one which directly or indirectly is most frequently examined, and it is no exaggeration to state that upon the delicacy, skill, and gentleness which is exercised in its accomplishment, a large amount of the gynecologist's success in practice depends. Notwithstanding scientific eminence and great personal advantages, any awkwardness or roughness in the

practitioner's manipulations will certainly soon become known, and his examinations be dreaded and avoided. On the other hand, vaginal explorations may be rendered painful from the undue delicacy of the medical man who will not require his patient to assume the posture which renders them most easy.

(a.) *Tactual Examinations.*—When it is intended to find out the condition of the vagina by touch, the patient should be placed upon her left side. In this position every part of the canal can be explored by the finger. If, however, it be desirable to determine the extent of a rectocele or a cystocele, the patient must be placed on her back or upright, for in the lateral recumbent postures the labia are closed and the protruding walls compressed. A varicose condition of the vaginal walls can be felt more distinctly when the patient is erect.

(β.) *Visual Examinations.*—The posture used in inspecting the vagina must vary with the part of its walls which is desired to be brought into view, and the kind of speculum intended to be used. A cursory examination of the vaginal walls can be made with a cylindrical speculum while the patient is on her side; but if a more minute investigation is required, she must either be placed in a semi-prone position with her hips raised and her shoulders low, or on her back with the knees separated. In these two latter postures, with specula of one or more blades, any portion of the vagina can be clearly seen. Small fistulous openings are sometimes most difficult to discover. A minute vesico-vaginal fistula is best found when the patient is on her back, for in this position milk injected into the bladder gravitates through the aperture and is readily seen if the anterior wall of the vagina has been properly brought into view. A small recto-vaginal fistula in the lower part of the septum may be

most readily detected when the patient is on her side, by passing a finger into the rectum and everting the vaginal wall.

All vaginal specula can be introduced with the greatest facility while the patient is on her back, for in the lateral positions the labia are more or less closely approximated, and the vaginal orifice thereby contracted.

(b.) *Operations.*—Most vaginal operations can be best performed when the patient lies upon a table in the dorsal position, with the knees held up and back by assistants. Experienced operators, however, say that some cases of vesico-vaginal fistula are more readily operated on when the patient kneels, with her body resting in a horizontal posture. In all operations upon the anterior wall of the vagina, dorsal recumbency is best, as it causes the blood to gravitate from the bleeding surface. It also has the advantage, in operating for vesico-vaginal fistula, of preventing blood from falling into and clotting in the bladder.

Vaginal injections should never be given when the patient's shoulders are lower than her hips, for gravitation of the pelvic contents from their cavity may cause uterine aspiration, and serious results. In syringing the vagina, the patient may safely sit or lie upon her side or back if the shoulders be well raised.

6. *The Uterus.*

(a.) *Examination.*—Ingenuity has been taxed to the uttermost in providing numerous modes of investigating the various conditions of this organ. Many of these can only be mastered by great attention, and considerable patience and experience.

(a.) *Tactual Examination.*—Immediate examination of the

uterus by touch is confined to its vaginal portion, and to its cavity after dilatation. The condition of the vaginal portion may be discovered by the finger while the patient lies on her side. The cavity can be best explored while she rests in the dorsal posture; for thus placed, the uterus can be conveniently pressed down from above—a proceeding necessary to allow the examining finger to penetrate deeply.

Intermediate tactual examination of the uterus is of various kinds. The lateral posture is best for simple, uncombined examination of the uterus through the rectum or vaginal vault, and dorsal recumbency is the most suitable in combined or bi-manual examinations.

(β.) *Visual Examinations.*—The vaginal portion and cavity of the uterus are the only parts of the organ capable of being brought into view. Diseases of the vaginal portions are so common, and examinations of it so frequently required, that the best method of carrying them out becomes a question of much moment. As a rule, it is the os uteri which is generally wished to be seen; it is often no easy task to discover it, and many fail altogether in finding it from want of bearing in mind the relative axes and position of the organs. They either fail to remember that the axis of the vagina is not in a line with that of the body, or the axis of the uterus in a line with that of the vagina; or they neglect to find out by tactual examination, before passing the speculum, whether the uterus rests in a normal or abnormal direction. Examining a patient on her side with the cylindrical speculum is nearly always unsatisfactory. The axis of the vagina causes the mouth of the instrument to be tilted forward, and in this situation the legs of the patient impede the light, and get in the way of the head and arms of the examiner. If he attempts to rectify this by

drawing the mouth of the speculum backwards, its distal end immediately slips forward, away from the os uteri, which normally lies in the direction of the sacrum. In uterine retrorsion the lateral posture may answer very well; but in all ordinary cases the os and cervix uteri can be best brought into view when the patient is semi-prone, or lies on her back.

(γ.) *Mensural Examinations.*—In measuring the cavity of the uterus by means of a sound, the patient should lie on her side. The axis of the uterus being from before downward and backward, the handle of the sound after its introduction passes in the direction of the anus. When a patient lies on her back during the use of the sound, the surface upon which she rests comes in the way of the operator, and prevents the necessary depression of the handle. In retrorsion, these conditions are reversed, and the instrument may be most conveniently used while the patient is on her back.

Gynecometrical examinations of the uterus by means of sounds placed simultaneously into adjacent cavities or externally may, in most cases, be carried out satisfactorily whilst the patient is recumbent on her side, but it may be occasionally necessary to use other postures.

(b.) *Operations.*—In all operations upon the uterus through the vagina, the patient must be placed in the dorsal recumbent or semi-prone posture, the former being, generally speaking, the more convenient. When the uterus is operated upon through an opening in the abdominal wall, the woman must of course lie upon her back.

In making applications to the os and cervix uteri, the dorsal recumbent posture has great advantage, for when the patient is so placed, the axis of the vagina lies from before downward and backward, and consequently when fluids are

used they do not run out of the mouth of the speculum, but gravitate towards the surfaces to which they are intended to be applied. They are thus prevented from staining and destroying the patient's linen, and remain in safety until absorbed by cotton-wool. If it is intended to reap these advantages in a semi-prone posture, it will be found necessary to raise the patient's hips and lower her shoulders.

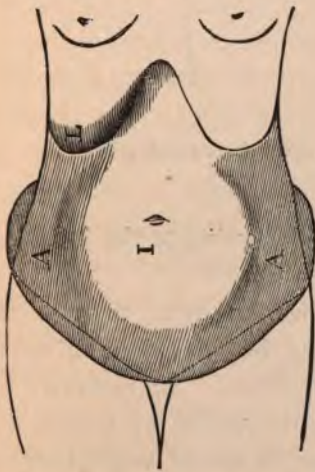
The rules as to posture, which have been mentioned as necessary to be observed when syringing the vagina, apply with equal force when injecting the uterine cavity, and should be carefully borne in mind.

7. *The Ovaries.*

(a.) *Examinations.*—The ovaries, when normal, being so small and mobile, their examination by touch is always difficult; they may, however, sometimes be felt through the roof of the vagina when prolapsed, or by the combined vaginal or rectal and abdominal method when the patient lies on her back with the shoulders raised. They may also be felt, when the woman is thin and in the recumbent position, by pressing deeply down in their region through the abdominal walls. When an ovary becomes enlarged by disease, the difficulty of detecting and examining it ceases. By careful manipulations a fair estimate of its size and position can now be easily obtained. If an ovary be only moderately enlarged, it is a good plan to turn the patient on the side of the affected organ, with her shoulders a little raised, for if she be allowed to lie on the opposite side the ovary will gravitate behind the uterus, and assume a position much more difficult for examination. In the diagnosis of large ovarian tumours, posture is of the greatest service, and more particularly in differentiating between ascites and ovarian

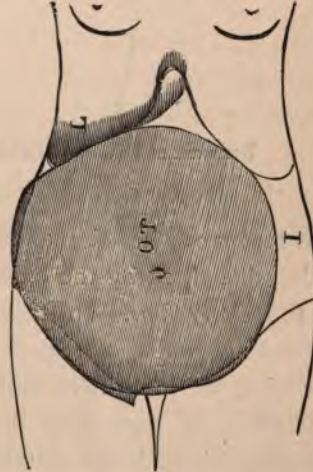
dropsy. In the former, the fluid can gravitate to any part of the abdominal cavity; in the latter, its movement is limited by the containing cyst. When a patient suffering from ascites lies upon her back, the fluid gravitates to the posterior part of the abdominal cavity, and the intestines, with their gaseous contents float, producing areas of resonance and dullness, as in figure 7. In the same posture a patient with ovarian dropsy would present areas as in figure 8. If a woman suffering from ascites stands or sits erect, the ascitic fluid falls to the pelvic cavity and lower part of the abdomen, and the areas of resonance and dullness

FIG. 7.



Resonant and dull areas in ascites
(Barnes).

FIG. 8.

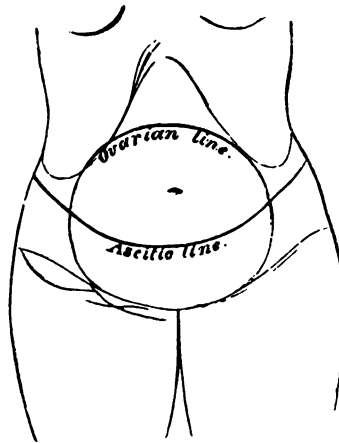


Resonant and dull areas in ovarian
dropsy (Barnes.)

under percussion are again changed, as in figure 9. With every change of a patient's posture, the ascitic fluid moves, and with this movement the area of fluctuation shifts. It is scarcely necessary to add, that this is not the case in ovarian

dropsy. In diagnosing which ovary is affected, the patient should lie upon her back, when it will be found that there is

FIG. 9.



Resonant and dull areas when the patient sits or stands (*Barnes*).

less resonance on the affected side, owing to the intestine being dislodged by the enlarged ovary.

(b.) *Operations.*—In tapping ovarian cysts through the abdominal walls, the patient may be placed in a dorsal reclining or lateral recumbent posture. If, however, the operation be performed through the vagina or rectum, the lateral position is not suitable; for, so placed, vaginal aspiration may occur, and air be sucked into the cyst through the tube. In ovariectomy, although the lateral and half-sitting postures have been proposed and used, most operators place their patients in the dorsal recumbent position. Unfortunately, any posture which favours the flow of blood, or cyst fluid, from the abdominal cavity, also causes the intestines to escape through the wound. It is sometimes difficult, even

in the recumbent posture, to prevent this annoying complication. Where drainage is desirable after ovariectomy, the influence of gravitation upon the offending fluid may often be remembered with advantage.

8. *The Rectum.*

All examinations and operations upon the rectum are best performed when the patient is semi-prone, or upon her side, with the knees well drawn up. Injections into the rectum are facilitated by the hips being raised higher than the shoulders.

CHAPTER VII.

POSTURE IN OBSTETRIC EXAMINATIONS AND
OPERATIONS.

THE operative procedures necessary in treating functional anomalies of gestation and parturition have already been considered in Chapter IV. Here it is intended to draw attention to some examinations and operations connected with pregnancy and labour which have not hitherto been noticed, and which more especially belong to operative mid-wifery.

I. *Examinations.*

(a.) *Tactual Examinations.*—By the aid of touch alone a large amount of valuable information may be obtained. The sense may be used in various ways, and each method may be made to verify or rectify the evidence afforded by the others.

(a.) *Internal Examinations* are made by passing the finger, fingers, or hand into the parturient canal.

1. *Standing.*—In this country the erect posture is seldom used in vaginal touch. It may, however, be useful to employ it in some cases—*e.g.*, when it is desirable to discover the extent of a varicose condition of the uterus, vagina, or vulva—for in this posture the veins become distended to a much greater degree than when the patient is recumbent. To be examined standing the patient should rest with her back against some unyielding surface, with her knees separated, or the obstetrician who kneels before her may employ his non-examining hand in supporting the patient's loins.

2. *Recumbent*.—Nearly all internal examinations can be best made while the patient is in the left lateral or dorsal recumbent posture. If the former be employed the rectum and vagina can be readily explored; but if in this position the labia cannot be easily separated, the latter will be found easier for the operator, and less painful for the woman.

(β.) *External Examinations*.—Palpation by one or both hands may be performed whilst the patient is in different postures, and these must be selected according to the peculiarities of the parts which have to be examined and the nature of the information sought.

1. *Standing*.—This posture has few, if any, advantages; but it has many positive disadvantages. It is fatiguing to the patient, and she cannot flex her thighs to remove tension from the abdominal muscles.

2. *Recumbent*.—The dorsal recumbent posture is without doubt the most generally useful position in which a woman can be placed when undergoing abdominal examinations. She should lie with her head and shoulders raised, with her knees drawn up and separated, and her feet resting on the surface upon which she lies. If the abdominal walls be thick and unyielding greater relaxation can be obtained by placing a pillow under the hips, for in this way the spine is flexed to the greatest extent. In this posture both palpation and percussion can be effectively practised.

(γ.) *Combined Examinations*.—The external and internal methods of examination, when employed simultaneously, are extremely useful, and should be practised while the patient is in the dorsal recumbent position, with her abdominal muscles relaxed, in the manner described in the last paragraph.

(δ.) *Repercussive Examinations (Ballottement)*.—Between the fourth and seventh months of pregnancy the fetus floats so freely in the uterine cavity, and gravitates in it so sensibly,

that these characteristics have been used in determining whether or no a child exists in the womb. Whatever may be the posture of the mother, the fetus gravitates and remains in contact with the most dependent part of the uterus. If at this point the fingers be made to press suddenly upwards, so as to propel the fetus vertically, it will shortly fall by gravitation, and the fingers will feel the repercussion as it alights.

1. *Internal Repercussion.*—This is usually performed while the patient is standing; but if the axis of the uterus be remembered, this position will at once be recognised as unscientific. Percussion by the fingers in the axis of the vagina will strike the uterus laterally, and fail to cause the required movement of the fetus. When the mother is erect the weight of the child is borne by the pubic bones and lower part of the abdominal walls. Internal repercussion should, therefore, be employed while the patient sits on the edge of a chair or bed, with her body in the dorsal reclining posture, for thus placed, the uterus will be perpendicular, and the head of the fetus will rest upon the uterine neck. Vertical percussion, while the patient is thus posed, will be most likely to give the desired fetal repercussion.

2. *External Repercussion.*—When the fetus floats freely in the cavity of the uterus, repercussive signs may be obtained externally while the patient is in almost any posture. The best position, however, for external repercussion is the knee-head-descending, for in this posture the uterus is vertical, and sudden pressure from below upward causes the fetus to recede, and fall with its whole weight upon the fundus.

Another form of external repercussion may be observed when the mother turns rapidly from one side to the other, when the fall of the fetus upon the lower lateral wall of the uterus may sometimes be felt by the hand.

(b.) *Visual Examinations.*—Although examinations of the

breasts may be included under this heading, it is scarcely necessary to refer specially to them, as they may be made while the patient is in any position.

(a.) *Internal Examinations.*—These may be effected when the woman is on her side or back. The latter is generally the better posture, for during gestation and parturition the labia are often tumified, and cannot be sufficiently separated when the lateral recumbent position is adopted. On the back also the speculum can be passed with less pain, and any altered condition of the neck of the uterus or of the vaginal or vulvar mucous membrane may be more readily observed.

(β.) *External Examinations.*—The general conformation of the abdomen can be best seen while the patient is standing or lying on her back; but it may be requisite to change her position if it be desirable to know what influence gravitation of the fetus and uterus may have in altering the contour of the abdominal walls. Changes in the navel and surface of the skin may be best observed when the woman is in the dorsal recumbent position.

(c.) *Aural Examinations.*—Auscultations of the fetal heart, &c., can usually be best effected while the patient is on her back, with the shoulders and knees raised; but sometimes, by turning the woman on her side, the cardiac sounds can be detected when they are inaudible in the first-named position.

(d.) *Mensural Examinations (Pelvimetry).*—Measurements of the pelvis may be taken of its inner or outer surfaces by the hand or by instruments.

(a.) *Internal Mensurations* can be effected while the patient is lying on her left side or back.

(β.) *External Mensurations*, by means of calipers, may be best done while the woman stands or lies on either side.

(γ.) *Combined Mensurations* can be most readily made

while the patient lies on her back, with her knees and shoulders raised.

2. Operations.

(a.) *Turning*.—Posture may be often advantageously used to facilitate or effect changes in the position of the fetus whilst in the uterus.

(a.) *Postural Turning by the Head*.—If the head of the fetus be situated too much to the right or left above the brim of the pelvis, and the membranes be not ruptured, rectification of the fetal malposition may be effected by posture. The woman must be directed between the pains to lie upon the side towards which the head deviates, and when it has reached the required position the patient should turn on her back, lest the head be carried too far, and assume the opposite lateral malposition.

(β.) *Posture in Turning by the Head*.—The dorsal recumbent is the most suitable position for the patient when turning by the head is attempted by external or combined manipulations.

(γ.) *Turning by the Feet*.—The earlier obstetricians when turning the child almost always placed their patients in the knee-head-descending posture, and there may be occasions when it might possibly be advantageous. The most generally useful posture for the woman during this operation is the left lateral recumbent. Some authors advise the dorsal recumbent position during extraction of the child and in turning when the fetus is in the abdomino-anterior position.

(b.) *Manual Dilatation of the Cervix Uteri*.—This is best done while the patient lies on her left side, the operator dilating with his left hand and effecting counter-pressure upon the fundus of the uterus with his right.

(c.) *Extraction of the Placenta*.—Whether this operation

be performed after abortion or parturition at term, the position of the patient should be the same—the dorsal recumbent, with the knees and shoulders raised. The operator should pass his left hand or part of it into the uterus, while he presses down the fundus with his right.

(d.) *Extraction of the Child by Forceps.*—There is great difference of opinion in Europe as to the position in which a woman should be placed during this operation. Here our patients are placed on their left sides; on the Continent they are made to lie upon their backs. It is probable that both positions have their advantages, the lateral being the better early, and the dorsal late, in the operation. Except for disturbing the patient there can be no reason why both postures should not be successively employed, but by bringing her hips well to the edge of the bed and separating the knees, it will seldom be found necessary during the use of forceps to prescribe any other than the left lateral posture.

The foregoing remarks apply equally well to the operation of cephalotripsy.

(e.) *Craniotomy.*—The patient should lie upon her left side during this operation, with her hips projecting slightly over the edge of the bed. This posture, besides being most convenient for the operator, prevents the bed being soiled, as it allows the blood, brain substance, and water injected into the cranial cavity, to flow directly into a basin. This position is also suitable for the use of the perforator and craniotomy forceps.

(f.) *Symphiseotomy.*—The woman should be placed on her back, with her shoulders low and the pelvis raised. When the patient is in this posture the child gravitates towards the thorax, and the fetal head is thus prevented from pressing upon the pubes and complicating the operation.

(g.) *Cesarean Section.*—The dorsal recumbent, with the shoulders slightly raised, is the most suitable position in

which to place the patient during this operation. It is convenient for auscultation and catheterisation of the bladder before the operation, and has none of the disadvantages of the sitting or dorsal reclining postures which have been recommended by some operators. Raising the trunk has been suggested in order to favour the escape of fluid from the abdominal cavity or to prevent its entrance, but the position which accelerates the outflow of fluid has the same influence upon the omentum and intestines, and the escape of these viscera is, even when the patient is recumbent frequently a source of difficulty and annoyance; besides which the raised position of the head has a tendency to cause faintness.

(h.) *Postural Treatment of Fetal Asphyxia.*—The following are the postural methods of inducing respiration in the newly-born fetus:—

(a.) *Sylvester's Method.*—Having drawn the tongue forward, place the infant on its back and extend the arms above its head; this expands the chest and produces inspiration. Then bring them down to the sides and compress the thorax to effect expiration. This process should be continued for half an hour at the rate of twenty-five manœuvres a minute.

(β.) *Marshall Hall's Method.*—The child is first to be placed on its thoracic and abdominal surfaces, and then rolled over on its side. The first position compresses and the second expands the thorax.

(γ.) *Schroeder's Method.*—Inspiration and expiration are produced by extending and flexing the spine in the following way:—First support the loins of the fetus with the hand and allow the head and arms, and pelvis and legs, to fall downward; then turn the child over on its face, and allow it to bend over the abdominal surface, which must be supported by the hand.

(δ.) *Schultze's Method* is thus described by Schroeder :—The child is so held between the legs of the accoucheur that the thumbs are placed upon the anterior surface of the thorax, the index-finger in the axilla, and the other fingers along the back ; the face of the child is turned away from the accoucheur. The child, thus grasped, is then swung upwards, so that the lower end of the trunk turns over towards the accoucheur, and, by bending the trunk in the region of the lumbar vertebræ, the thorax is greatly compressed. By such passive expiratory movements the inspired liquids pass abundantly out of the respiratory openings. A very powerful inspiration is then produced by extending the body of the child by swinging it backwards, so as to return it to its previous position. In this way expiration and inspiration are repeated until they become spontaneous.

(ε.) *Howard's Method*.—In this method the child is laid upon its back on the left hand of the operator, the ball of whose thumb supports the back and extends the spine, causing the shoulders to droop and the head to bend downward and backward. The buttocks and thighs are supported by the operator's fingers. The thorax is then completely grasped by the right hand. With this hand, and the other affording counter-pressure, the chest is to be compressed and allowed to expand at the rate of from seven to ten times a minute.

(i.) *Auto-transfusion*.—This operation has not yet received the attention it deserves ; its object is to cause the blood contained in the body to flow in vessels where its presence is necessary to life. This is effected chiefly by raising the limbs and abdomen above the level of the head and chest. Gravitation then acting on the blood, causes it to leave the more elevated and flow to the more dependent parts of the body. This method has been found very efficacious in post-partum hemorrhage, for it not only supplies the vital organs

with blood but checks further loss by elevating the pelvis. It has also been found useful in cases of fainting after chloroform and anemia after ovariectomy.

An easy way of practising it is to make an inclined plane by placing a chair with its back sloping upon a bed. Pillow should be arranged on the surface upon which the patient is to rest, and her legs and loins should be lifted up on the inclined plane, so that the body lies straight at an angle of forty-five degrees or more from the horizon. The arms also should be raised and maintained perpendicularly. The influence of gravitation in removing the blood from the raised parts may be assisted by stroking the limbs downwards and kneading the abdomen. Auto-transfusion is so simple an operation and is so easily performed that it ought always to be tried before having recourse to ordinary transfusion, for should the latter operation be required, the time necessarily spent in preparing for it cannot be better employed than in carrying out the foregoing directions. Auto-transfusion should also be used before attempting to rally the patient by excessive quantities of alcohol.

(k.) *Transfusion.*—During transfusion, whether the mediatorial or immediate method be employed, the patient should lie on her back with the pelvis and legs raised. If the immediate plan be adopted, the arm of the recipient should lie parallel with and on a lower level than the arm of the blood donor. In opening the vein of the patient the arm should for the time be allowed to rest lower than the chest. In this way the vessel will be found less collapsed, and consequently more easily discovered and opened.

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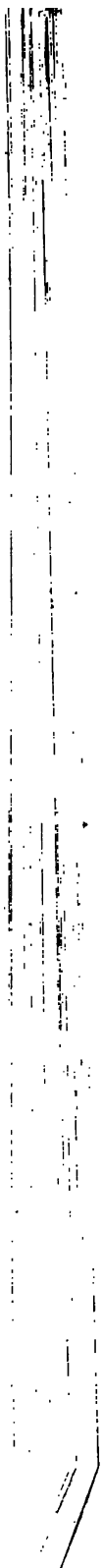
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